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CONSTRUCTION AND RELATED INDUSTRIES

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**USSR REPORT
CONSTRUCTION AND RELATED INDUSTRIES**

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CONSTRUCTION PLANNING AND ECONOMICS

GOSPLAN OFFICIAL ON NEW PLANT CONSTRUCTION IN KAZAKHSTAN

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 2, Feb 85 pp 46-48

[Article by A. Masakbayev, NIEIPiN [Scientific-Research Economic Institute on Planning and Standards] section chief under the Kazakh SSR Gosplan [State Planning Committee], candidate in economic sciences: "Developing the Regional Structure of the Machine Building Complex"]

[Text] The Basic Directions for Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990 state: "[We must] strive toward high mutual interrelation in the development of the mining and processing industry and in sectors producing and consuming labor tools. In doing so, we must give overall consideration to the expansion of international socialist cooperation and to intensifying specialization of production."

The sectorial structure of machine building in the South Kazakhstan region is represented by 10 subsectors which are distributed nonuniformly throughout the oblasts. The sectorial and regional structures of machine building do not always coincide.

A chemical industry of union significance has been developed in the region, but chemical machine building is represented by a single small experimental-test plant in Alma Ata. All of the extensive chemical industry concentrated in Dzhambulskiy Oblast does not have a corresponding machine building base. As a result, the demands of the chemical enterprises in the oblast and the region for machines, equipment, assemblies, instruments, nonstandardized equipment and spare parts are generally met by the production of plants located in far-away rayons of the country. Also, this equipment is developed without sufficient consideration for the operational peculiarities of mineral deposits or for the demands of mining enterprises and chemical industry plants. Often it does not meet current production, social and ecological requirements.

The electrotechnical, machine-tool and instrument building industries are sectors of machine building which determine scientific-technical progress in all sectors of material production and in the non-productive sphere. The level of their development in the region does not correspond to the capacities. The favorable regional and labor resources and insufficiently utilized.

Machine-tool building in the region is represented by only two enterprises—the Chimkent Production Association for the manufacture of forge-pressing

equipment and the Alma-Ata Machine-Tool Building Plant imeni 20th Anniversary of October. Nevertheless, the effectiveness of their operation is high. This is evidenced by the recovery time for capital investments into the development of the sector.

In accordance with the system of social division of labor in the country, instrument making in the region must undergo appropriate development, since the solution of the problem of mechanization and automation in the region's national economy depends greatly on the state of organization of production of automation means, instruments, complete sets of units and parts, installations for automatic control and regulation of technological processes, control systems, etc. However, the existing enterprises in the sector do not correspond to these tasks.

The Alma-Ata Repair-Bearing Plant and the Chimkent Driveshaft Plant represent the automobile industry in the region. Both enterprises have good prospects for growth.

We may consider the following machine building subsectors as profiling the region: tractor and agricultural for needs of animal husbandry and fodder production; construction-road building and communal for the needs of the light and food industry, and domestic appliances. Together with the electrotechnical industry, chemical and petroleum machine building and instrument making, these sectors correspond to the region's specialization in the system of the country's national economy. The degree of their development greatly determines the successful resolution by the South Kazakhstan region of the socio-economic tasks set by the 26th CPSU Congress and subsequent Plenums of the CPSU Central Committee.

The level of tractor and agricultural machine building and machine building for animal husbandry and fodder production does not correspond to the task of intensive development of the huge agricultural and animal raising region. As a result, the power capacity for the planted fields in Southern Kazakhstan comprises 165-170 hp per 100 ha, while throughout the country this figure is 284 hp. Many labor processes are not fully mechanized in animal husbandry. For example, the level of integrated mechanization on cattle farms in 1982 reached 64 percent, on hog raising farms--73 percent, on sheep raising farms--14 percent, and on poultry farms--89 percent. We must stress the fact that around half of the total head of sheep and goats in the republic are situated in this region, yet the problems of integrated mechanization of labor in sheep raising remain unsolved. The single machine building enterprise in the region--"Mankentzhivmash"--has still not reached its project capacity. Reconstruction could transform it into a machine building plant of union significance. The animal raising farms in the central Asian republics, Kazakhstan and other regions of the country have a particular need for this production.

Rice, beet, vegetable, fruit farming and viticulture are well developed in the region, but they also do not have a sufficient machine building base. No plant complex for mechanization of labor in these vital sectors of agriculture is being developed. The small Kzylordarismash Machine Building Plant is slowly increasing its capacities, and the development of project-estimate documentation for its expansion has been delayed.

In light of the decisions of the October (1984) Plenum of the CPSU Central Committee, construction-road building and communal machine building are taking on exceptional importance for the region. The enterprises in this sector must manufacture excavators, ditch diggers, graders, bulldozers, scrapers, rollers, construction-finishing machines, mechanized tools, brickmaking equipment, snow loaders, equipment for building and maintaining runoff and irrigation channels, for laying drains, etc. Despite the importance of this sector of machine building for the region, it does not participate sufficiently in the production of machine building products of appropriate profile. The Kentau Excavator Plant and the Dzhambul Communal Machine Building Plant manufacture products of narrow nomenclature: excavators with bucket capacity of 0.4 and 0.63 m³, laundry equipment, and dry cleaning machines.

Among the leading and profiling sectors defining the national economic specialization of the region are the light, food, meat and dairy, flour milling-cereal, combined fodder, and local industries. These sectors are sufficiently developed, but they are not integrated with machine building. Unfortunately, the complex does not include machine building enterprises of optimal size developed with consideration for the demands for technology by the national economy in several regions of the country. The enterprises in these sectors have a high portion of manual labor and the problem of integrated mechanization and automation has not been solved.

Machine building for the light and food industry and domestic appliances must occupy a special place in the region. However, these subsectors of machine building have not received significant development, since the volume of production of the three small plants is insignificant. The reconstruction of the Alma-Ata Elektrobytprabol Plant is proceeding at an exceedingly slow rate. The small technical outfitting and precision casting plants located in Turkestan and Lenger are also not giving great output.

The development of the regional structure of the machine building complex in Southern Kazakhstan must be done on the basis of reconstruction of existing and construction of new plants.

One of the future rayons of development and location of machine building in the region is the Kartau-Dzhambulskiy TPK [territorial production complex]. The production program for machine building in the TPK must be planned to a significant degree for the needs for machines, equipment and instruments by the region's enterprises. Here it is necessary to consider the demands for machines and equipment by the chemical enterprises in Chimkent Oblast. In turn, all the machine building enterprises of the Southern Kazakhstan region must participate in satisfying the demands of the Kartau-Dzhambulskiy TPK for technology.

The TPK has particularly great demand for pumping-compressor, electrotechnical and nonstandardized equipment, as well as spare parts for imported equipment. The Karatau Production Association has a significant shortage of electrical equipment, mining and transport equipment, and the spare parts for it. According to preliminary computations, in 1985 this deficit will reach 146.3 million rubles, and in the future--235 million rubles. To this we must add

the demand for machines by the chemical enterprises of Chimkent Oblast and the republics of Central Asia. The Novodzhambulskiy Phosphorus Plant, the Dzhambul "Khimprom" Production Association and the Dzhambulsk Superphosphate Plant alone will require 15.8 million rubles worth of equipment in 1985.

At the present time, the demand of the TPK enterprises, and particularly that of the chemical and mining enterprises, for equipment is being met only by means of import. Ofcourse, we cannot even speak of repeating all the sub-sectors of the country's chemical machine building in the TPK. Nevertheless, this sector may be developed in the region with consideration for the system of social division of labor in the country.

It would be expedient to locate machine building plants for refrigeration, compressor, pumping and nonstandardized equipment in the oblast. A certain portion of the demand for technology, especially for armature, electrical equipment, large-scale machines, ventilation equipment, control-measurement instruments, replaceable units and spare parts, particularly for electric furnaces, pumping-compressor equipment, excavators. and technological transport should be met by means of their on-site production.

There are a number of machine building, metal processing and repair enterprises operating on the territory of the TPK. These, together with new plants, may form the machine building base for the complex. They are the Dzhambul Spare Parts Plant, the Dzhambul Communal Machine Building Plant, the "Kazkhimpromenergo" Plant, a mechanical repair plant, two experimental mechanical plants, a metal structures plant, an assembly plant, an auto repair plant, and a plant for the repair of road technology. In the future, these together with other enterprises must participate in the formulation of the region's machine building complex.

It is expedient to rationalize repair production by means of formulating a single complex in the TPK which may be comprised of the appropriate plants (shops) from the "Karatau" and "Khimprom" Production Associations, the Novodzhambul Phosphorus Plant, the Dzhambul Superphosphate Plant, and the Chimkent Production Association "Fosfor".

In the forthcoming period, the region's demand for new technology, including the demands of the Karatau-Dzhambulskiy TPK will be satisfied to a large degree through the expansion of existing and the construction of new machine building plants.

Here primarily are extensive bases for the development of the electrotechnical industry. A great help in this endeavor may be nonferrous metallurgy, which is quite promising, the electrotechnical cluster of enterprises in Taldy-Kurgansk Oblast, and the electrotechnical plants in Alma-Ata and Chimkent Oblasts. It is true that they are small, but they may be used as the basis for creating a complex of electrotechnical enterprises.

Aside from the existing enterprises, this complex in the Southern Kazakhstan region in the future should include plants for the production of electric fork lifts, electrothermal and welding equipment, small lead storage batteries, large electrical machines, low-voltage apparatus, etc.

An important prerequisite for the development of machine building in Southern Kazakhstan is the presence of broad capacities for the training of the necessary personnel. The VUZes, scientific-research and planning institutes of the Kazakh SSR are located here. All this makes it possible to develop machine-building subsectors in the region, particularly the subsectors of machine-tool and instrument making and radio electronics.

In the forthcoming period, the production of metal processing equipment, machine tools with programmed control, industrial robots, automatic technical means, microprocessors, computer devices, and automatic control systems must undergo development in the region. These current sectors have a good material-technical base for broad expansion.

The structure of machine building in the region must be improved by means of formulation of the automobile industry. For this it is expedient to build a complex of plants for the production of passenger automobiles, since the region is located near the necessary source of resources --the Karaganda Metallurgical Combine--and has convenient outlets for the finished production.

It would be expedient to create a complex of plants for the production of machines, mechanisms and equipment for cultivating and harvesting rice, beets, fruits, vegetables, curcurbit cultures and grapes. The Alma-Ata "Porshen" [Piston] Plant and the Dzhambul Spare Parts Plant may be of help in formulating specialized machine building in the region which corresponds to agricultural profile.

Since animal raising is well developed in the region, there is a need for developing a specialized complex of machine building plants which would produce sets of machines and equipment for lifting and supplying water at animal raising farms, for integrated mechanization of labor by animal breeders and fodder procurers, and for modern fodder shops.

In accordance with the decisions of the October (1984) Plenum of the CPSU Central Committee, the area of arable land will be significantly increased in the region in the forthcoming period. The region is becoming a major center for rice planting. A broad program of hydroeconomic construction is being outlined. However, hydroeconomic and land reclamation machine building has not undergone development in the region.

The task of realizing the decisions of the October (1984) Plenum of the CPSU Central Committee urgently requires the development of construction-road building, hydroeconomic and land reclamation machine building in the region.

One of the basic requirements in the development of machine building in the republic is the manufacture of equipment, instruments and apparatus for environmental protection and for the rational application of natural resources.

A large agro-industrial complex has been developed in the region. Its prospects are also associated with the development of a technical base, particularly machine building for the light and food industry and domestic appliances.

Thus, the structure of the machine building complex in Southern Kazakhstan must be improved in the direction of developing chemical, agricultural, construction-road building and communal machine building, the electrotechnical and automobile industries, machine tool building, instrument making, the manufacture of domestic appliances, and machine building for animal raising and fodder production, as well as for the light and food industries.

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CONSTRUCTION PLANNING AND ECONOMICS

EASY CREDIT BLAMED FOR WASTE, LAG IN CAPITAL CONSTRUCTION

Moscow PRAVDA in Russian 9 Aug 85 p 2

[Article by L. Braginskiy, doctor of economic sciences, and N. Petrakov, corresponding member of USSR Academy of Sciences, under the rubric "In the Land of the Soviets": "Money for Building: Problems and Opinions"]

[Text] For many years the problem of capital construction has remained on the agenda, but, as was correctly pointed out at the CPSU Central Committee conference on problems of scientific and technical progress, there has been no basic improvement in this area. The overextension of capital investments has continued and construction deadlines have dragged out unbelievably. What is the reason that measures for improving the administration of this sector have not until recently yielded the desired results?

We think this has come about because, on the whole, special stress has been laid on the improvement of supplying construction projects with materials, technology and labor resources. Yet balancing plans for capital construction with financial resources is surely no less important.

Money for construction is received through many channels: budgetary allocations and intra-sector redistribution of profits and depreciation. Also the enterprises' and the ministry's own resources. And finally, bank credit. There is no clear border between these resources: when there is a shortage of one of them, it is replaced by another. Not accidentally, the problem of getting money for an enterprise is much simpler a procedure now than, let's say, "shaking loose" material resources.

Let us take bank credit for example. One percent is now taken from collectives for planned long-term loans. Yet the efficiency standard for capital investments, i. e. the demand acknowledged by society, is established at around 15 percent. Obviously such "cheap" credit can leave economists indifferent about the quality of a project and the recovery of the expenditure.

Customers obtain about half of their money allocations from the state budget, which is replenished for the most part, as we know, out of deductions from the profits of all sectors of the national economy. And one should know how the profit in question is formed. As an example, in construction there is a

concept of "unrealized profit." This means that the construction may be counted as unfinished, while the contracting organization is already beginning to receive income, a part of which it transfers to the budget.

From industrial enterprises, too, there are a number of budget entries of "extra" capital not supported by real results. Goods have been lying for a long time on the shelves of a store, let's say, yet deductions for the budget from these unsold products are being made.

A considerable portion of the funds for capital investments develops in the enterprises and ministries themselves, from profits left for them. However a part of this capital is not in fact earned on a cost-accounting basis. In fact, economic subdivisions receive labor and natural resources free of charge, although the state expends considerable capital to reproduce them (personnel training, land improvement). As far as the means of production are concerned, they are allotted to enterprises at a very favorable price.

Finally, there are long-term credits. They do not make up a high portion of financial sources. Their replacement of basic allocations from the budget will strengthen the cost-accounting responsibility of the enterprises. However, such a replacement cannot be a mechanical act.

Credit is actively used in the socialist economy, and credit relations between enterprises and organizations and the bank will grow in proportion with the expansion of the sphere of their economic independence and responsibility.

But where do contracting organizations, which today owe society billions of rubles for long-term construction, draw their capital? After all, they have to pay workers and employees, purchase materials, and their own working capital makes up only 10 percent of the annual work volume. Here the bank will help as well; in payment for projects ready to begin operation, builders receive the overwhelming part of their financial resources in the form of credit.

Quite a few good words have been said about banking operations of this type. High hopes are placed on them. In particular, they have come out of the special role of increased penalty interest rates on loans when work is held up beyond planned deadlines. And although there is a certain influence from these rates, as the experience of the work of the USSR Stroybank [Bank for Financing Capital Investments] shows, the inadequacy of this measure is appreciable.

The fact is that when a project's start-up is disrupted, the punishment is borne mainly by the builder, although often it is the suppliers and customers who are at fault for the delay in the work. Due to the inefficiency of the latter, construction projects receive incomplete equipment. And the burden for the disruptions of others lies with the contractor.

If money has quickly turned into production growth and additional production output in new enterprises, then everything is in order, for the expenses of society have begun to be repaid by the construction of buildings and the installation of machinery. In case a project is under "extended construction," the money paid out in the form of payroll to the builders and the deductions for received materials are deprived, as it were, of their content.

Let's trace the turnover of capital paid out in wages to workers for a project where production is not completed for a long time. At this time, the overall cost of the unfinished construction, in other words the cost of work expended on projects not yet put into operation, is tens of billions of rubles. A considerable part of this money goes to workers and employees for wages. That is, many billions of rubles in cash are given out as an advance. And the longer the project is under construction, the more serious the problem becomes.

It turns out that money is in circulation that has no concrete realized value to support it. Such resources introduce disharmony into the operating turnover and create an excess of demand over supply.

It is useful to recall the words of V. I. Lenin: "...money turnover is a thing that perfectly tests the satisfactoriness of the country's turnover, and when this turnover is wrong, money becomes useless paper."

The "cheapness" of money resources proposed by economic organizations and the broad means for selecting them are the basis for an excessive demand for material resources. As long as no restrictions are placed on the use of money resources, enterprises will hardly really begin to fight for efficiency in projects on which they intend to build or reconstruct shops. Therefore an improvement of the economic mechanism in construction sectors must be carried out, improving the management of the money economy.

The most serious transformations in financial and credit policy are needed in order to accomplish two tasks: to increase the value of money in operational circulation, and to attain a planned balance between the money mass and the presence and turnover speed of the material resources of the national economy. For this, in our opinion, a considerable decrease in payment transactions is required, i. e., in the sum of circulating non-cash money resources. This can be done if we are guided by this principle: each enterprise must have total resources only equal to its contribution to the final yield of the national economy.

We must eliminate from the turnover gratuitous, uncompensated allocations for production projects. This means that budget allocations and all kinds of intra-sector subsidies for enterprises will necessarily be sharply reduced, that a progressive tax assessment on profits will be carried out with an accounting for all assigned resources and their repayment norms. By the same token, the development of genuine cost-accounting, i. e., self-reimbursement and self-financing, will be given a real basis -- to spend no more funds than one earns. Finally, we must review the situation of extending credit in the national economy very seriously. It is time to seriously raise the requirement for the repayment of credit investments. It is impossible to achieve this without an increase in interest rates. And they, in their turn, must stimulate a selection of the most efficient projects and expenditures.

In order to balance the plan for capital investments and ensure timely completion of priority projects, it would be expedient to stop work on part of

the initiated construction projects. This is precisely the way the task was put at the CPSU Central Committee conference on problems of accelerating scientific and technical progress. The effect of concentrating financial resources in a given situation will undoubtedly exceed possible losses which may result from carrying over the completion of certain projects to much later dates.

A restructuring of the work of finance and credit organs, which long ago became imminent, will help to work out such a view. We think that a rule must be established according to which budgetary expenses should develop only in proportion to the factual realization of production and the completion of construction. This will compel all organs of economic administration without exception to seek efficient means of applying funds.

It is also important to overcome the lack of rapport between credit institutions. Now, as we know, every enterprise may be a client of the USSR Stroybank as well as the USSR Gosbank. Functions of extending credit for construction and capital turnover are distributed between them. Such separation is the result of the detachment of capital construction from current production, although in the latter fixed capital created by the builders is utilized and the main sources of capital investments develop.

In the final analysis the matter boils down to this: to construct a unified credit and finance plan on a nationwide scale, what must be taken into account is not separate financial flows (although they may be the most important ones), but the money turnover as a whole. Today deductions from enterprises' profits pass through the state budget along with payments for assets, population taxes and a number of other forms of revenue. But it does not embrace, for instance, profits left to be disposed of by collectives, funds for developing science and technology, etc.

The presence of numerous financial and credit plans barely connected with each other violates the principle of a unified plan for the national economy and interferes with balancing the flow of money and materials. We think the USSR Gosplan could unite all the financial resources of the national economy and bring about financial centralization as a fact. For this, besides including a unified financial and credit plan (not merely a balance) in the plan for the national economy, the total payment transactions for the country should be centrally planned.

12962
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CONSTRUCTION PLANNING AND ECONOMICS

ACHIEVEMENTS, GOALS OF FIVE-YEAR PLAN'S FINAL YEAR

Moscow STROITEL'NAYA MEKHANIKA I RASCHET SOORUZHENIY in Russian No 1, Feb 85
pp 1-3

UNSIGNED

[Abstract] The Soviet Nation has entered the final year of the eleventh five-year plan. Thanks to the steps taken by the Party, the nation's economy has developed dynamically over the past two years. The plan and budget for 1985 have considered both achievements and problems in the economy. The 1985 plan calls for further development of external economic ties. Intended to satisfy the needs of the workers, the assignments for 1985 are based on a firm economic foundation. Greater attention must be given to preserving material resources, efficient organization of labor, improvement of product quality, improvement of administration and of the entire economic mechanism. The gross national product is to increase by 3.5 percent, almost entirely in the consumer area. Processing branches of industry are to grow by 4.4 percent, machine building and metal working by 6.5 percent. 4,200 new types of machines, instruments and materials are to be put in use. 27.5 billion rubles are to be invested in science, 3.6 percent greater than in 1984. Fundamental research will be significantly expanded. The real income of the population is to increase by 3.3 percent. The final year of the five-year plan will see a significant increase in the economic and military might of the Soviet nation.

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CONSTRUCTION PLANNING AND ECONOMICS

DEVELOPMENT OF ECONOMIC MECHANISM IN CONSTRUCTION

Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 84, p 12

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[Abstract] The course 'Development of the Economic Mechanism in Construction' began to be presented as a part of the economics curriculum in 1984-1985. A typical program for the course was published in a previous issue of this journal. This article presents materials intended to help propagandists and students with the first few themes of this course. Examples are given of economic experiments which have been performed, intended to increase the work of the construction area of the economy. The first theme of the course covers improvement of the economic mechanism as an important means of intensifying production in construction and duties of all participants in the construction process to utilize the economic mechanism to its best advantage.

[094-6508]

CONSTRUCTION PLANNING AND ECONOMICS

IMPROVEMENT OF PLANNING AND ACCOUNTING

Moscow EKONOMICHESKAYA GAZETA in Russian No 11, Mar 85 p 12

BALAKIN, V. and CHERNOMORETS, O., USSR State Planning Commission

[Abstract] Improvement of planning and accounting involves increases in the mutual responsibility of ordering organizations and contractors for the performance of the construction program. Proper determination of planned cost of construction and maintenance of this cost during working planning and in the process of construction are quite important in this area. Personal responsibility of executives in planning and construction organizations must be increased. Where planned costs are not met, the responsible persons should not be awarded bonuses. The administrators of existing organizations must be given the right to order modernization and reconstruction on the basis of agreed upon estimates which should be developed considering the actual conditions and nature of production operations. Of particular importance is increasing the effectiveness of the system of material stimulus in the construction field with wages being determined as a function of the quality and economic effectiveness of plan decisions. Bonuses for the performance of the most difficult and responsible work should reach as much as 50% of wages. The construction of 'turnkey' housing is a modern trend justified by experience. Under this system, the general contractor is responsible for timely completion of all construction and installation operations. Subcontractors are responsible to perform their duties in a timely manner.

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CONSTRUCTION PLANNING AND ECONOMICS

ECONOMIC CONTENT OF COSTS FOR STARTUP AND ADJUSTMENT OPERATIONS

Moscow PLANOVYE KHOZYAYSTVO in Russian No 1, Jan 85 pp 109-112

TRUSOV, A., Doctor of Economic Sciences and CHISTYAKOV, B., Candidate of Economic Sciences

[Abstract] One of the most difficult and controversial aspects of planning for costs is allocation of startup costs to operating expenses of industrial enterprises. The effect that this policy has on computed cost of goods sold is discussed at length. It is concluded that capital investments and startup costs contribute to the costs of the product of the construction project, not the product produced at the plant which is the product of the construction project.

[060-6508]

JPRS-UCR-85-015
29 October 1985

CONSTRUCTION PLANNING AND ECONOMICS

MEANS FOR DECREASING VOLUME OF INCOMPLETE CONSTRUCTION

Kishinev KOMMUNIST MOLDAVII in Russian No 11, Nov 84 pp 59-62

GUTSU, A., Laboratory Chief, Scientific Research Institute of Planning,
Moldavian State Planning Commission, Candidate of Economic Sciences

[Abstract] During 1966-1980, the economy of Moldavia received 16.6 billion rubles worth of construction projects, representing 88.9% renovation and an increase of total invested capital of more than 3.6 times. The expanded scale of production occurred with an increase in the rate of growth of capital investment over the rate of realization of capital. This resulted in a tremendous increase in the quantity of construction in progress in the republic. This quantity represented 40-60% over the standards for the quantity of incomplete construction projects. In the planning stage, construction projects at various levels of completion should be included in quantities and proportions such that the overall limit of capital investment allows continuation of construction at the rates called for in the norms. This approach can serve as the basis for standardization of construction of all types of resources.

[078-6508]

CONSTRUCTION PLANNING AND ECONOMICS

NARROW MINDED VIEWS HAMPER INDUSTRY DEVELOPMENT

Moscow SOVETSKAYA ROSSIYA in Russian, 13 Feb 85, p 1

NIKOLAYEV, Yu., Editor, SOVETSKAYA ROSSIYA, Party and Soviet Construction Department.

[Abstract] A narrowly provincial approach to the planning of the location and manufacturing profile of factories is shown by several examples to be quite undesirable. A new shoe plant in Tambov is unable to meet its production quota because of the shortage of experienced shoe plant workers, while other shoe plants elsewhere close down because of the refusal of the Ministry to allocate funds for modernization and reconstruction, forcing experienced shoe manufacturing workers to seek jobs in other fields. Provincialism is facilitated by the abundance of limitations binding the leaders of oblasts, rayons, plants and state farms hand and foot. A state farm builds a few sheds, and sanctions are imposed because the 'construction project' was not included in the state plan.

[093-6508]

CONSTRUCTION PLANNING AND ECONOMICS

CALL FOR IMPROVED ESTIMATING, PLANNING WORK

Moscow EKONOMICHESKAYA GAZETA in Russian No 6, Feb 85, p 5

BASHILOV, S.V., Chairman, State Committee for Construction Affairs, USSR.

[Abstract] The 'editors' submitted questions related to the system of measures for further improvement of planning and increasing the role of consultation and secondary supervision in construction approved in January, 1985 by the CC CPSU. The Chairman of the State Committee for Construction, S.V. Bashilov, responds to these questions in this article. The new requirements call for redefinition of union-wide and departmental standards for technological planning, redefining the basic parameters of a plan: technology of production, selection, operating conditions and placement of technological equipment, organization and equipping of workplaces, standards for consumption and reserves of raw materials, fuel and power resources, numbers of workers and employees and other important characteristics. A number of standards documents relating to construction planning, norms and rules will have to be rewritten. The significance of outside consultation and approval of plans and supervision of construction by the plan authors will increase. Standard plans on file must be reviewed and those not corresponding to the current level of achievements in science and technology must be modified or replaced.

[092-6508]

CONSTRUCTION PLANNING AND ECONOMICS

BETTER RESULTS EQUAL HIGHER WAGES

Moscow STROITEL'NAYA GAZETA in Russian 1 Feb 85, p 1

[Abstract] An unnamed correspondent discusses the specifics and trends in the system of measures for improvement of the organization of the system of wages and stimulus of labor in construction recently approved by the CPSU Central Committee, USSR Council of Ministers and All-Union Council of Trade Unions with Yu.Ye. Pak, Deputy Chief, State Committee of the USSR for Labor and Social Problems. The new resolution calls for enlargement of the size of working teams to allow a single team to complete entire stages of construction, with differential wages paid to supervisors as a function of the number of supervised. A sliding scale of bonuses is provided allowing increases in bonuses of up to 20 percent for better results. The range workers to receive bonuses for timely completion of projects is expanded to include manufacturing plants involved in construction projects, truck transportation organizations and planning-design organizations. Prize funds to be awarded to workers for timely completion of projects are included in the planned cost of the projects and cannot be used for other purposes.

[091-6508]

JPRS-UCR-85-015
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CONSTRUCTION PLANNING AND ECONOMICS

COMBINED CAPITAL CONSTRUCTION PLANNING SYSTEM

Moscow EKONOMIKA I MATEMATICHESKIYE METODY in Russian No 1, Jan 85 (manuscript received 27 Apr 84) pp 69-82

ANTANAVICHYUS, A.A. and YAKOVLEV, A.M., Vilnius, Moscow.

[Abstract] The major purpose of the automated capital construction planning system designed in 1977-1983 was the preparation of a system of methods and software for technologically well-founded planning of capital construction, balanced at all levels and with respect to all indices. The system is intended as a tool for objective analysis of plan situations, generation of possible solutions, evaluation of their effectiveness and production of five-year and current plans within the loop of their gradual development. This article presents flow charts explaining the flow of information and control throughout the system. Planning of capital construction can be performed with or without the base of norms and standards. Schedules for the construction of specific objects or typical standard schedules can be used in the process. The first segment of the system has been put in operation at the Construction Ministry of the Lithuanian SSR and the Main Administration for Upper Bulgar Construction, USSR Construction Ministry. Experimental operation of the system is also under way at five major production administrations of the USSR Ministry of Construction. The system is planned for introduction in all territorial organizations of the USSR Construction Ministry.

[088-6508]

CONSTRUCTION PLANNING AND ECONOMICS

CALL FOR EARLY OR ON TIME PROJECT COMPLETION

Moscow STROITEL'NAYA GAZETA in Russian 4 Jan 85, p 1

ISHCHENKO, I.I., Deputy Chairman, USSR State Construction Commission

[Abstract] It is particularly important to complete work at startup construction projects, which are scheduled to be completed in 1985, the final year of the eleventh five-year plan, and to begin giving benefit to the economy. Examples listed include tremendous increases in power production capability, with a two thirds increase in electric power produced at nuclear and hydroelectric power plants. The chemical industry and the machine building industry, the heart of socialist industry, are also scheduled for sizable increases in capital investment. Transportation will receive its share of improvement in materials and equipment. The CPSU Central Committee and the Council of Ministers has published a resolution 'On Improvement of Planning, Organization and Administration of Capital Construction' in connection with these increases in construction activity. The resolution calls for balance in development and improvement of the effectiveness of construction work, achieving improvements in the organizational structure and system of economic stimulus. Suggestions have been put forth for radical improvement of construction work in the next year. Industrial methods of construction are to be put in place, with installation of complete systems of engineering equipment preconstructed as units.

[087-6508]

CONSTRUCTION PLANNING AND ECONOMICS

ARMENIA'S CONSTRUCTION PROGRESS, PROBLEMS OUTLINED

Yerevan PROMYSHLENNOST' ARMENII in Russian No 11, Nov 84, pp 6-10

AGASANDYAN, A., Correspondent

[Abstract] Many construction and installation organizations are meeting their planned assignments: contract operations are 3.1 percent ahead of plan, completed projects 1.6 percent ahead of last year, total volume of construction and installation work 4.5 percent ahead of last year. However, during the first half year some 85.9 million rubles of capital projects were not put in operation which should have been, capital investments were under utilized by 63.5 million rubles and volume of construction and installation work was underfulfilled by 28.4 million rubles. Of 68 construction projects, only 15 have fully utilized their budgeted capital investment. The author interviews Eduard Pashoyevich Avakyan concerning measures being taken to meet the plan for construction. From year to year, it is noted, on the average 10 to 20 percent of construction projects fail to be completed on schedule. This is frequently due to unsatisfactory work by subcontract organizations which fail to meet their quotas. Furthermore, failure to receive planned quantities of lumber has become chronic, with external suppliers delivering only 70 percent of the planned quantity, frequently of inferior quality. Manufacturers of precast reinforced concrete structures are frequently short of rolled metal products, the shortage reaching 7.7 percent in 1982-1983, resulting in delays in the manufacture of reinforced concrete products.

[080-6508]

YEARS OF DELAY OF PLANT CONSTRUCTION CHRONICLED

Moscow IZVESTIYA in Russian 9 Jul 85 p 2

[Article by IZVESTIYA's own correspondent G. Gubanov, Rostov Oblast: "The Vacant Lot: Selected Passages from Correspondence with Departments"; indented passages shown in different font]

[Text] Fifteen years ago the ispolkom of the Millerovo City Soviet of People's Deputies complied with a petition from the USSR Ministry of Heavy and Transport Machine Building and adopted a decision to allot for its metallurgical equipment plant imeni Gavrilov, located right in the city center, 17 hectares of land for the construction of new buildings.

Thus the customer--the Millerovo metallurgical equipment plant of the USSR Mintyazhmarsh [Ministry of Heavy and Transport Machine Building]--received land for the building site, and a trust of the Glavsevkavstroy [Main Administration for Construction in the Northern Caucasus] of the USSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] became the general contractor.

It is now 1985. Here before us are those same 17 hectares--an enormous vacant lot. Lush weeds grow up through the pavement: there are heaps of broken bricks and indeterminate rusty structures. The gray boxes of buildings only begun look dejectedly at all this from the empty eye sockets of unfinished windows. What sort of "hurricane" passed through here? Alas, there is nobody to ask--not a soul on this enormous territory. What happened to the plant? Was there a plant? These questions were answered for us by a body of correspondence, selected passages from which we offer to the reader.

JULY 1977. "To the Trust of Glavsevkavstroy, USSR Mintyazhstroy, Rostovna-Donu: The decision concerning the construction of the metallurgical equipment plant imeni Gavrilov on land allotted by the obispolkom is not being implemented. Since May all work has stopped. We request that immediate measures be taken. P. Trandafilov, plant director."

However, the answer to this letter, as well as to many others found in the thick file folders, was unfortunately sought in vain.

JANUARY 1978. "To the Rostov Party Obkom and Oblispolkom: Construction of the plant was begun in accordance with a decree in 1974. The general estimated cost is more than 40 million rubles. Construction Trust #2 is doing absolutely nothing to develop its facility in the city. The plan for contract work was fulfilled by 77 percent in 1976, and by only 39 percent in 1977. Glavsevkavstroy executives do not react to requests from the party gorkom and gorispolkom and do not even respond... Millerovo Gorkom and Gorispolkom."

Following this letter, the builders were publicly reprimanded at the vacant construction site, and they promised to start work immediately.

APRIL 1978. "USSR Mintyazhstroy: Your directives of 15 March of the current year concerning the necessity of improving Glavsevkavstroy's construction of the plant are not being implemented. Work has stopped. We request your intervention. P. Trandafilov, director."

MARCH 1979. "USSR Mintyqahmash and Mintyazhstroy: Measures for improving conditions at the construction site are not being taken. Equipment is missing from the area and workers are standing idle. The invested funds remain dead capital and are giving no return to the state. Allocations earmarked for special purposes in developing this facility are not being used by Glavsevkavstroy for those purposes. We request that representatives of the ministries intervene and render assistance in the construction of this important project. V. Logachev, secretary, Millerovo Party Gorkom."

APRIL 1980. "USSR Gosplan: The plant start-up and a production output of nearly 10 million a year were planned for 1977. For all practical purposes construction has been suspended. We request a directive be given to Mintyazhmash... Party Gorkom, Ispolkom and Plant Management."

MARCH 1981. "To Plant Management and Gorispolkom, Millerovo: In connection with an overload at the trust and a lack of production capacity, the volume of contract work claimed by you is not accepted. A. Terekhov, manager, Trust #5, Glavsevkavstroy."

FEBRUARY 1982. "The Ministry of Heavy and Transport Machine Building has considered your letters regarding the question of plant expansion and informs you that, at the beginning of 1981, during the formulation of the contract-work plan for 1982-85, USSR Mintyazhstroy declined to implement the work on the project indicated... The question of continuing construction of the main building complex during the 11th Five-Year Plan, beginning with 1983, will be considered during the formulation of state plans, bearing in mind the goal of

ensuring that a production capacity be introduced in 1986 for turning out 7,000 [tons] of rolled-stock equipment per year. Mintyazhmash requests your cooperation through local organs in the contract work taken on by Glavsevkavstroy. V. Nalivayko, deputy minister."

FEBRUARY 1982. "USSR Mintyazhmash: Under the title of projects carried forward, the ministry makes no provisions for the continuation of work at our plant for the period up to 1985 (letter of Soyuzmetallurgmash [All-Union Association of Metallurgical Machinery] of 20 Jan 1982). Glavsevkavstroy has proposed that official documents concerning the construction work stoppage be drawn up with a penalty (fine) to be paid by the plant in the amount of 1.6 million rubles... In the interests of preserving the project, we request the question concerning the continuation or suspension of construction be resolved in the prescribed manner. P. Trandafilov, director."

The ministry confined itself to a phone call; however, an answer came from the general contractor.

MARCH 1982. "The work load of the builders in Millerovo up to the end of the five-year plan consists of more than 12 million. To fulfill these projects before the end of 1982 requires that organizational measures be taken to increase the capacities of the construction administration. USSR Minselkhozmash [Ministry of Tractor and Agricultural Machine Building] in its project of development is considering handing the assembled plant buildings over to the Rostselmash [Rostov Plant for Agricultural Machine Building] production association. Glavsevkavstroy can coordinate the work volume for continued construction of the plant in 1983 and following years provided that one of the projects is eliminated from the program of the glavk [main administration] through USSR Gosplan... I. Stanislavov, chief, Glavsevkavstroy."

SEPTEMBER 1982. "USSR Mintyazhmash: Since 1978 Glavsevkavstroy has for all practical purposes discontinued the construction of the plant. In recent years Mintyazhmash has not allocated capital investments and has not shown any interest in including this construction project in Mintyazhstroy's plan of contract work. The project is becoming dated: the erected structures are worthless. Neither the gorkom nor the gorsoviet ispolkom has received answers to analogous letters. For the second time we request through USSR Gosplan and Mintyazhstroy that the question of continuing the construction during the 11th Five-Year Plan be resolved... Gorkom, Gorispolkom and Management."

SEPTEMBER 1982. "USSR Mintyazhmash informs you that in formulating plans for capital construction... the allocation of funds for continuing the plant's construction has been provided, with Glavsevkavstroy's confirmation of its agreement to carry out the volume of construction and erection work, at no less than 1 million rubles per year. V. Nalivayko, deputy minister."

SEPTEMBER 1982. (This answer was signed on the very same day as the previous one!) "The USSR Ministry of Construction of Heavy Industry Enterprises has considered your request concerning including the continuation of the plant's construction in the Glavsevkavstroy plan for 1983-85, and informs you that in formulating the plan for 1983, USSR Mintyazhmash did not declare the indicated project (?!). The question about the construction project will be considered in making up plans for 1984-85, provided that Mintyazhmash allocates quotas for the indicated construction. V. Zabelin, deputy minister."

SEPTEMBER 1983. "USSR Mintyazhmash: The reinforced-concrete and metal construction are in an emergency condition. We have the conclusions of a scientific-research institute that if the necessary measures are not taken, considerable capital investments will be required in the future to restore them. P. Trandafilov, director."

SEPTEMBER 1983. "USSR Gosplan has considered USSR Mintyazstroy's proposal to relieve construction organizations... The Millerovo plant has been eliminated from the plan for 1984. The record of proceedings was approved by V. Isayev, the (by now former) deputy chairman, USSR Gosplan."

MAY 1984. "To the Trust of Glavsevkavstroy. 700,000 rubles have been earmarked for 1984 to continue plant construction, but Trust #5 has not begun work as of the present moment. We request your cooperation. P. Trandafilov, director."

ANSWER: "We are returning without our consent the intralist title list in connection with the absence of your construction project from the work plan of our trust. A. Terekhov, manager, Trust #5, Glavsevkavstroy."

It must be noted that Mintyazhmash itself does not wish to admit that the construction project has been frozen for a long time. Here is how the state of affairs is assessed, for example, in the decision record of the collegium, which met in February 1985. "Extreme schedule delay in the construction work and introduction of output operation at the Millerovo metallurgical equipment plant." Delay? It would probably be more accurate to say that no construction work has been going on at the plant for ages. In the same document--the program for the period up to 1990: "For the Millerovo plant--provide first of all

for the construction of the main building with an output of 7,000 tons of rolled-stock equipment per year"--the same building whose start-up was already planned for 1979.

In the last 10 years about 7 million rubles were spent at the construction site, and for that same period all projects were frozen, among which were the main building (43,000 square meters), the boiler house, the dining hall, the administrative and domestic services building, the fuel-oil storage tank, the intraplant access railways, plumbing pipes and ducts, the building for auxiliary service and storage with a shop for the production of popular consumer goods, etc. And the project itself is dated.

"The microrayon around the new plant is the face of the city," says Gorispolkom Chairman N. Volovatov. "When we were deciding about allotting the land, we figured that we would create a lovely city area here: 150,000 square meters of living accommodations, a new water supply, a vocational technical school, a health center (polyclinic), a secondary school, a children's center (kombenah)... Now several convocations have gone by and the deputies--from the city soviet up to the USSR Supreme Soviet--have been receiving one and the same mandate: finish building the plant and start the production output. But we can do neither one nor the other.

The latest surprise: recently the ispolkom was informed of the official estimate for...repairing the technical buildings, the skeletons of which have been built...

I ask the first secretary of the party gorkom, V. Logachev, under whom the efforts concerning this construction site began, with the confirmation of the design task, as early as in 1966:

"Tell me, Vladilen Tikhonovich, have you personally tried to go to the ministry, for example, or to the USSR Gosplan..."

"Just recently I have been to see the minister twice, I have gone twice to see First Deputy R. Arutyunov, and every year I meet with V. Nalivayko, the deputy in charge of capital construction. I have appealed repeatedly to the USSR Gosplan... The doormen at these organizations no longer ask me for identification--they know me by sight... Our second secretary of the party gorkom, V. Kuznetsov, has just returned from Moscow where he visited the minister of heavy and transport machine building, Comrade Afanasyev. And again the assurance: 'We will erect it!' And now a written answer has arrived: 'We are allocating funds for...a temporary close-down and will gradually continue construction...'."

6 MAY 1985. "We hereby inform the gorispolkom that two ministries--of heavy and transport machine building and of heavy construction--have, at the ministerial level, allocated capital funds and specified the volume of construction and erection work for the plant imeni Gavrilov for the period up to 1990. The document has been approved by two deputy ministers representing the builders and the customer. The following are scheduled in it with an accuracy of up to 1,000

rubles: when, how much and on what project the funds will be spent, and when each of them is designated to begin operation... The Plant Management."

INFORMATION: For the current year, with an estimated cost for the construction at tens of millions, only 3,000 rubles have been earmarked for creating the facility, and those are not being utilized. Once again, for 1986, there are strike-outs in the plans opposite all the projects. So don't expect a single ruble...

Yet the next dispatch is flying on its way from Mintyazhmash to Millerovo:

"I permit the plant to effect payment in the sum of 183,000 rubles for additional construction and erection work on the main building, to be charged under the article entitled 'Unforeseen Work and Expenses' in summary budget accounting. This has been occasioned by an interruption in the construction of this project. Deputy Minister V. Nalivayko."

The interdepartmental merry-go-round of papers turns round and round.

12962
CSO: 1821/151

ORGANIZATION OF CAPITAL CONSTRUCTION AT WORKING TEAM LEVEL

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 11, Nov 84 pp 57-60

PIVKINA, V., Chief of Team for Introduction of Team Order, 'Kazmontazhproyekt' Institute

[Abstract] The author describes problems in the organization of construction efforts at the level of organizing the commitment of a construction team for work to be performed during a given period. No matter how enthusiastically individual workers and teams may perform their jobs, construction projects will not be finished on time and industrial enterprises will not be put on stream in the planned period unless organization is improved. Well thought out organization, good preparation of production, and atmosphere of mutual responsibility for the final results of construction, with significant improvements in the area of organization of supply of materials and equipment can contribute to timely completion of construction projects if combined with the moral and material interests of the workers. The method suggested in this article is conversion of the entire construction system to 'continuous flow' team organization. This method, used at the Novodzhambul Phosphorous Plant, yielded very impressive results. Projects which formally required twenty months were completed in ten. This doubling of the speed of completion of projects was achieved not by increasing the number of workers, but by increasing the quality of organization of construction work. The mean monthly wage of workers has also virtually doubled, from 1097 rubles in 1981-1982 to 1925 rubles in 1983.

[077-6508]

INDUSTRIAL CONSTRUCTION

RESPONSIBILITY FOR CONSTRUCTION COMPLETION DELAY

Moscow KHOZYAYSTVO I PRAVO in Russian No 12, Dec 84 pp 59-60

DOROKHINA, Ye., Senior Legal Consultant, Krasnoyarsk Production Union of Heavy Excavators

[Abstract] A plan is now being developed for new rules for construction contracts for capital construction. The author calls for changes in the rules concerning responsibility for delays in completion of construction. Under the present conditions, the ministry responsible for a startup project, desiring to place all startup projects in operation, delays acceptance of objects until the end of the year, giving the contractor time to correct problems. Since this means that the ordering organization does not complete its paperwork within the assigned period of time, the ordering organization must pay the general contractor penalties, even though the actual reason the paperwork is being delayed is to give the general contractor time to correct deficiencies. This is a clear case in which the guilty party collects from the innocent party, and requires a change in contract rules.

[063-6508]

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29 October 1985

INDUSTRIAL CONSTRUCTION

FILM AIDS CEMENT PLANT IMPROVEMENT

Moscow TRUD in Russian 23 Dec 84 p 2

POTIYENKO, A., Union Committee Chairman, Teploozersk Cement Plant, Khabarovsk Kray

[Abstract] For 43 quarters in a row the workers of the author's plant have won the Traveling Red Banner of the USSR Construction Materials Ministry and Union Central Committee by exceeding their planned capacity by one third. The output of the plant has been awarded the State Mark of Quality. At one time, the plant was old and among the poorest in the area. However, it was born again at a union meeting, where a trip of union leaders was organized to another more successful cement plant. A color film was made at the more successful plant, and another in the shops of the author's plant. When the two films were shown at a meeting, the contrast was so unflattering that the workers began to redesign and re-equip the plant step-by-step, reducing manual labor, reducing the dust content of the air, and increasing the results of production.

[062-6508]

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INDUSTRIAL CONSTRUCTION

REDUCE CONSTRUCTION TIME

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 4, Apr 85 pp 5-10

UNSIGNED

[Abstract] During the eleventh five-year plan, construction workers of Kazakhstan have completed a number of large industrial projects and have also completed about 25 million square meters of housing area, the equivalent of constructing a new town of 100,000 residents every 80 days. However, construction workers in the republic should not rest on their laurels. During the final year of the eleventh five-year plan, the time required to complete construction projects must be reduced. Many construction sites have difficulty in obtaining supplies and materials. Over half of the enterprises in the construction ministry failed to meet their quota in January for increasing the productivity of labor. Administrative shortcomings and failures of leadership among general contractors have also delayed completion of products. Socialist competition for strict fulfillment of plans by the end of the eleventh five-year plan must be more broadly developed in construction, with full mobilization of production reserves, rapid introduction to practice of the achievements of scientific and technical progress and front-rank experience, efficient and economical utilization of all resources.

[132-6508]

INDUSTRIAL CONSTRUCTION

NEW KAMA TRACTOR PLANT TO BE BUILT

Moscow STROITEL'NAYA GAZETA in Russian 20 Feb 85, p 2

LISAKOV, V., Yelabuga-Moscow

[Abstract] A gigantic plant for the production of universal tractors is to be constructed at Yelabuga near Moscow. By the end of this decade the equipment produced by this and other plants should liberate ten million workers from manual labor. Last year 1.620 million rubles of capital investment, significantly more than the plan, was made in the new tractor plant. The plan for this year is 32.5 rubles. The results of the first month indicate that the workers will meet this goal. A story is told of a young farm girl who came to work at the plant, as an inspiration to those people called forth to build this new tractor plant, which is of great importance to the Soviet State.

[080-6508]

HOUSING CONSTRUCTION

MATERIAL FOR PRIVATE HOUSING CONSTRUCTION MORE ACCESSIBLE NOW

Riga CINA in Latvian 31 May 85 p 2

Article by V. Podnieks: "The Acquisition of Construction Materials is Easier"

Text Readers remember, and still mention in their letters, the discussion that took place last year in CINA, "A Family Builds Itself a House." The difficulty a homebuilder encounters in transporting construction materials to the site was mentioned several times in the course of the discussion. Some could not get use of a truck for a month. If use of a truck had been arranged, very often an exorbitant price had to be paid to some self-seeker for even the most insignificant load. That is why people voiced their indignation and suggested, predominantly that transport services should be levied a flat state tariff but charge of their operation should be taken over by commerce organizations.

These proposals have been noted. In all rural areas, predominantly since April 1, an easing of construction material acquisition and transport conditions has been attained. That is why a CINA correspondent arrived at the Latvian Consumer Union and requested that the retail organization and technical management superintendent, A. Veipa, answer a number of questions.

-- First, the most important--about the transport of construction materials which up to now has frequently caused much consternation.

-- There are two solutions to the transportation problem.

Since homebuilders receive significant support from their companies and farmsteads, in the case of transportation too, we figured that our help would frequently not be necessary. That is why it has been decided that the homebuilder may arrive, with his transportation at the factory where construction materials are manufactured. In this case, he first visits the store, pays for his materials, and may then go pick them up at the factory. Should there be an emergency production increase of ordered goods, which are distributed by the regional executive committees, these can only be acquired at the particular store designated on the limits card or order.

In the absence of one's own transportation, delivery of construction materials must be arranged with the store. Tariffs vary according to size of load, type of material, distance of delivery and type of vehicle. In clarification, I shall give two illustrations. If 2,000 bricks have to be transported 10 kilometers, the cost will be approximately six rubles. If the same load has to be transported 25 kilometers, then approximately 11 rubles will have to be paid.

If a gas concrete delivery is desired, 11 cubic meters (a full load) transported 10 kilometers will cost up to seven rubles; a distance of 25 kilometers--up to 12 rubles.

-- What has been said would indicate that costs can be hard to pinpoint, but in money matters precision is imperative. How can this be achieved?

-- A price and regulation list is posted in every construction material outlet. It is suggested that everyone read these carefully. If they have further questions, they should turn to the store manager. All of them have been precisely instructed to give each customer the most detailed information, if such is requested.

-- Consumer cooperatives do not yet have their own means of construction material transport. What vehicles will be utilized for this purpose?

-- In this case, the factories who provide us with the materials will help us out. They will ship reinforced concrete and concrete materials any distance, within the regional borders, of course. The rest of the construction materials they will transport only within a 50-kilometer radius of the factory. Here it must be noted though, that this service will be provided only in those cases where the builder orders a full load.

In the same way they will also deliver the so-called untempered materials: sand, stone chips, and decorative sand. To receive them, orders must be placed at the construction material store.

-- How is the industry doing in the wake of these regulations?

-- Spring tarried; building sites were inaccessible for a long time. For that reason, neither positive nor negative experiences have been noted. We will be grateful to anyone who will apprise us of his conclusions. Should there be rough spots, we will then be able to remove them all the sooner from the construction material delivery path.

We are grateful to the Autotransport and Highway Ministry and the Construction Material Production Ministry for their insights and cooperation in the solution of the construction material transport problem. Hopefully we will continue to work together well and the road of construction materials to the building site will become ever easier.

-- More and more construction materials are sold outside the executive committee's distribution. But the factory delivers these on various schedules. People have,

therefore, up to now, often had to keep trekking back to the store in a needless waste of their time. What manner of accommodation is foreseen for them?

-- Every store manager knows his annual merchandise quota. They have been instructed to accept orders within these annual quota limits. When a shipment is received, buyers must be informed, according to the waiting list. In our opinion, this is a good method, and the only one to be adhered to.

-- Who has priority to obtain an increased request for construction materials?
-- It is decreed that such are received, out of sequence, by invalids of the Great Patriotic War, Mother-Heroines and the former Red Latvian Riflemen.

Participants of the Great Patriotic War have priority to receive them for the construction or renovation of homes and farm buildings as well as for the building of summer cottages.

Then it is the turn of kolkhoz, sovkhoz and other agricultural enterprise, their department, brigade and other structural union management personnel and specialists for the construction of their homes and farm buildings. After them come the rest of the private home builders. Only then can increased request construction materials be allocated for renovation purposes. The regional executive committees are presently putting these regulations into practice.

-- The purchase of goods on the time payment plan is especially popular. What can be obtained in the construction material and appliance stores by this method?

-- Four-burner gas ranges, water heaters and vacuum cleaners can be purchased on the time payment plan of up to one year, providing they are priced at 100 rubles or more.

Here we will say thank you for the answers, and take note of them, so that building materials may be acquired faster and easier.

Many new homes are being built in the Ogre region. Here there are approximately 1,300 individual builders. The largest construction material outlet is, naturally, in Ogre. This source is being used more and more widely, per the new regulations. For instance, a load of silicate bricks which arrived from the Riga Construction Material Production Union was re-addressed to A. Irsa of Ogre, who is building on Caine Street. For transporting 2.7 thousand bricks from the store to the destination he paid 10 rubles 15 kopecks. And--no problems. He has it good, as have others who have already taken advantage of this opportunity. Store manager, A. Pusmucana, showed increased concern during the arrangement of this delivery that, so to speak, watches would be synchronized between the construction material producers and their buyers. Time will show what still needs smoothing out.

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HOUSING CONSTRUCTION

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ACHIEVEMENTS OF BELORUSSIAN RURAL HOUSING POLICY VIEWED

Moscow ZHILISHCHNOYE STROITELSTVO in Russian No 6, Jun 85 pp 2-5

[Article by G. I. Voronyuk, first deputy chairman, BSSR Gosstroy: "On Re-organization of the Belorussian Village"]

[Text] Intensive work on bringing to life the policies of the CPSU in regard to the agrarian question has made it possible to realize a significant improvement in socialist agriculture and to achieve a radical reorganization of the social sphere of rural residents. The implementation of the tasks set by the 26th CPSU Congress will accelerate the socio-economic development of the village, will ensure the further growth of its economy and culture, and will facilitate an increase in the living standard of farm workers and in the implementation of plans for restructuring the outward appearance of populated areas.

The determining factors in the matter of reorganizing the Belorussian farm are the comprehensive development of its economic base, the realization of measures for improving the organizational-economic management forms in agriculture (creation of agro-industrial associations), and the implementation of measures for further specialization and concentration of agricultural production on the basis of inter-farm and agro-industrial integration.

The set of measures directed at the development of the rural economic base is closely tied with the resolution of social questions--from the reorganization of the system of rural settlement and its correspondence with directions of agricultural production which predetermine the placement of productive forces and places of labor application, and to the formulation of qualitatively new systems of planning organization for rural settlements, which provide for the rational resolution of residential areas, engineering provision for settlements and for production, as well as questions of increasing building aesthetics and selecting optimal types of residential houses and cultural-domestic institutions. The solution of this problem which is most complex for the conditions of the republic has required a qualitatively new approach on the part of the party, soviet and economic management organs. It is enough to say that at the present time there are around 4 million rural residents living in more than 20,000 farms and villages and that, naturally, most of these settlements, due to objective reasons, are not provided in full measure in the cultural as well as in engineering respects. The transformation of rural settlement is a difficult task not only in an economic sense, but primarily also in a social sense. There is no place here for haste and administrative red tape.

A fundamentally new direction for reconstructing the Belorussian village is the fact that work on improving cultural-domestic services is performed everywhere, in every rural settlement, in the farm centers, and in the small villages. The party, soviet and economic management organs, the ministries, state committees and republic departments have been given specific long-term tasks for the development of rural construction and the network of medical, domestic and cultural services to the population, for improving the external appearance of building in farms and villages, for creating a new and smoothly operating inter- and intra-farm road network, for improving engineering developments in rural populated areas. etc.

The BSSR Gosstroy has clarified the concept of rural settlement and, taking into consideration the sociological studies which have been conducted, has worked out basic directions for improving housing conditions for the rural population and developing the building and improvement of farms and villages in the 11th Five-Year Plan.

As a result of a thorough analysis of historically formulated settlement and of the search for directions to improve it, a clear-cut system of rational organization of rural settlement and location of agricultural enterprises has been developed. This has made it possible to sharply increase the level of control over the process of reorganizing the farm, and to implement this process in a planned manner, with consideration for improving the organizational-management forms of conducting agriculture and the effective application of labor resources and location of construction sites on the farm.

There has been a radical change in the attitude toward rural populated areas. Already in the past five-year plan, the terminology of "long-term" and "non-long-term" settlements has been rejected in the republic. At present there is only one concept—rural populated areas which are differentiated into centers of local systems of settlement, farm centers, and other settlements. Such a gradation makes it possible to specifically solve the problems of small villages while maintaining the continuity of the leading principles of building and improvement of central villages which have been worked out.

The housing program is the basis for resolving the social questions of the Belorussian farm. The realization of this program is under the constant control of the directive organs. The high degree of responsibility of builders and planners, as well as of local organs, for the timely fulfillment of their tasks has made it possible to sharply accelerate the rate of housing construction. Thus, in the 3 years of the 11th Five-Year Plan, the same amount of residential housing has been built as in all 5 years of the 10th Five-Year Plan.

The question of housing cost also takes on primary importance. The BSSR Gosstroy believes that the reserves for reducing the estimated cost of rural construction, material consumption and labor consumption in constructing buildings are far from being fully utilized.

The following factors play a large role in solving this problem: the introduction of a rational structure of rural housing construction in terms of story height and masonry materials; the selection of the most economical projects for the

republic Catalog; the introduction of a single unified series of large-panel house building on the farm, as well as the development of principally new design schemes and decisions for residences and the development of progressive methods for building houses.

Reducing the estimated cost of housing depends in large part also on the application of progressive designs, engineering equipment, etc. It is also necessary to accelerate the introduction of the most promising type of low-story housing construction into mass building—monolith construction. Computations show that the cost of $1m^2$ of a given overall area of a residential house made of one-piece construction is cheaper than analogous brick and large-panel designs by an average of 20 percent, and cheaper than silicate concrete designs by 28 percent.

In accordance with the plan for experimental design, projects for single-story and garret style single-family residential houses were developed in 1983-1984 utilizing products manufactured by the Slutskiy SSK [farm building combine] of the BSSR Ministry of Rural Construction. As a result of the introduction of effective enclosure structures, the application of garret-roofs, and the improvement of architectural-planning decisions, the project estimated cost was reduced by 15 percent as compared with projects for large-panel residential houses of the farmstead type which are currently in effect.

The plans of model design for 1985 which are based on the experience of experimental construction provide for the development of projects for rural houses which take into consideration a progressive design scheme of buildings with load-bearing walls made of gas-silicate blocks. This will make it possible to reduce the cost of building residences by an average of 4-5 percent. The development of projects for single-story farmstead type residential houses with walls made of brick, keramzit concrete block-panels, and monolith keramzit concrete in stock casing is currently being conducted on the basis of progressive unified design decisions with the application of wooden board trusses with ceiling panels made of gypsum-cardboard sheets. As computations have shown, such a design decision for roofs makes it possible to reduce the expenditure of metal to about 1/11 that required for the variant with reinforced concrete covering slabs which is currently being used, and to save around 500 kg of metal on each house. Moreover, this makes it possible to achieve a more rational and flexible planning structure of free inside space of apartments, as well as to reduce the cost of $1m^2$ of specified overall area and the construction labor expenditures for erecting the buildings by 8-14 percent.

The work being performed in the republic on the introduction of the unified base 210 series at all large-panel house building enterprises, regardless of their departmental affiliation, will facilitate the reduction of material consumption for rural large-panel residential houses. The substitution of series 210 products for the series 25 products which are currently being manufactured at the Gantsevichskiy KPD [large-panel house building] Plant of Glavposelevodstroy and by the Farinovskiy KPD Plant of Belmezhkolkhozstroy will make it possible to reduce the metal expenditure in natural computation by 19-24 percent, and will make it possible to save around 600 tons of steel annually.

In 1983-1984 the BSSR Gosstroy selected the most economical projects for residential houses of various types which correspond to the demographic structure of the rural population, as well as for buildings of cultural-domestic function which are most expedient in their cost indicators as well as in the expenditure of construction materials, heat losses and labor consumption for erecting the buildings. As a result, the number of projects for residential houses recommended for construction in the republic was reduced by 36 percent, while the number of projects for public buildings--by 45 percent.

Working in conjunction with the BSSR Gosplan [State Planning Committee] and other ministries, the BSSR Gosstroy developed standards for specific capital investments for the construction of residential houses in the republic's kolkhozes and sovkhozes. As a result of the application of the most economical projects for residential houses and farm buildings, as well as of improving the architectural-planning and design decisions, the estimated cost of 1m² of specified overall area of residential houses and farm buildings was reduced by 12.2 percent as compared with the indicators provided in the structure of housing construction for the BSSR in 1981-1985. The improvement of housing, communal-domestic and social-cultural conditions of life for the rural population is impossible without creating a network of inter- and intra-farm roads. Particular attention is being given to this question in the republic. The task has been set of completing the building of accessways with hard surfacing to each central farmstead of the farms, and for purposes of creating a rational network of intra-farm roads--to develop a general scheme of their development within the current five-year plan. The fulfillment of tasks on road construction, which is being done by the BSSR Ministry of Highway Construction and Maintenance and Belmezhkolkhozstroy , is constantly controlled. As a result, there are hundreds of farms in the republic where the transport problem has been fully solved. This makes it possible to significantly increase the effectiveness of application of motor transport technology and to significantly improve the level of services to the population.

Necessary measures are being taken in the republic to complete the development of projects for regional planning of administrative rayons in 1985, as well as to provide plan projects for sovkhoz and kolkhoz farms where intensive integrated construction is being carried out. Planning schemes are being compiled for performing appropriate reconstruction work in the small villages.

Upon agreement with Gosgrazhdanstroy [State Committee for Civil Construction and Architecture], the Belorussian Gosstroy has introduced a new set of project-planning materials for farms, which makes it possible to increase the effectiveness of planning decisions without increasing the overall cost of project-survey work. At the present time, 80 percent of the central farmsteads of kolkhozes and 93 percent of sovkhozes have planning and building projects.

The implementation of measures for the reorganization of the Belorussian farm is giving a tangible socio-economic effect. The work on popularization of leading experience in the transformation of farms and villages which has been organized in the republic also facilitates this matter to a significant degree.

Yet there are still many problems and tasks which must be resolved in the republic. Thus, the architectural-planning questions of farm building have not been fully worked out. There are also numerous problems in the realization of project-planning documentation, particularly as concerns the integrated development of farms. Often the master plans for settlements become outdated long before the time for their implementation has elapsed. There are serious shortcomings in the work of production cost accounting groups for rayon architects, and the work of building control organs must also be radically improved.

There has long been a pressing need for working out an all-union Statute on Production Cost Accounting Groups for the architectural-construction organs—the main executors of project planning work for farmstead housing and inexpensive public and production buildings. The system of wages for workers in these groups has not been worked out. They do not receive bonuses for the successful fulfillment of their production tasks, and their low wage scales make it impossible to attract qualified specialists with the appropriate training to this work. The same acute situation exists also for the GASK [not further expanded] inspection. There is still a series of problems whose solution is within the sphere of competence of the union organs. This is true primarily for the standards base. The ratification in January 1983 of the changes in SNiP [State Norms and Regulations] entitled "Residential Buildings" has had a favorable effect on improving the architectural-planning decisions of rural residential houses, particularly in regard to the standards for planning rural housing which generally make it possible to consider the demands of the rural population. At the same time, a series of questions associated with planning subsidiary and summer use facilities remains unresolved. The republic Gosstroy considers it inexpedient to strictly standardize the numbers and areas of storerooms and larders for houses of the farmstead type if farm structures and cellars are available in the sector. This is because the strict adherence to these parameters leads to an increase in the length of corridors, to "excess" partitions, to poorer design decisions of apartments and, as a result, to an increase in the estimated cost of construction. This, in turn, evokes rightful complaints from rural residents. The regulations for computing areas of furnace rooms, glassed-in verandas and cold storage rooms and for adjoining them to appropriate areas of the residential house have not been reflected in the standards documents.

For purposes of further improving the model projects for residential and public buildings and for taking into consideration the regional peculiarities, the BSSR Gosstroy considers it expedient to conduct the development of SNiP separately for urban and rural construction, or to give greater consideration to the specific peculiarities of the farm in the standards documents, freeing them from excess detail and giving the union republic gosstroys the right to resolve a number of questions in the republic instructive documents and planning assignments. It is necessary to establish a unified order for checking newly developed model projects by means of experimental construction immediately after a positive expert evaluation has been received. These projects must necessarily be attributed to their author-developers and there must be effective author's supervision over the construction. An important problem is the development and practical introduction of scientific-technical

decisions for systems of engineering improvement of rural populated areas, farmstead residences, and small public facilities. We are speaking here of effective individual apartment heat generators for heating and for hot water supply, heat pumps using low-potential power sources, volume-block equipment for systems of electrical and heat supply, sewers, purification of natural waters, etc. Despite the well developed industrial potential of the republic, it is practically impossible to organize the production of an entire series of equipment which is so necessary for the farm. There is a pressing need for solving these problems. Today, on the threshold of the 27th CPSU Congress, the participants in the republic's agro-industrial complex, builders and planners are taking all necessary measures to fulfill the decisions of the May (1982) and March (1985) Plenums of the CPSU Central Committee and the tasks set by the USSR Food Program.

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HOUSING CONSTRUCTION

IMPROVE LEVEL OF TRANSFORMATION OF RUSSIAN VILLAGES

Moscow SEL'SKOYE STROITEL'STVO in Russian No 12, Dec 84 pp 1-5

SABANEYEV, S., Chairman, State Construction Commission of the RSFSR

[Abstract] At the October, 1984 plenary session of the CPSU central committee, K.U. Chernenko called for radical changes and improvements in villages in the Russian Federation. The dynamics of the increase in nonproductive capital investments have been such as to allow an increase in the completion of housing area in rural areas by more than 11 percent in 1983-1984. Whereas throughout the country, investments in rural improvements decreased by 8 percent in recent years, in the Russian Federation the decrease has been 24 percent, in the nonchernozem region of the RSFSR - 30 percent. The improvement in the effectiveness of planning operations which has allowed this decrease in consumption of funds must continue, and will be largely dependent on introduction of the system of planning automation called SAPR. The Rostov Zonal Institute is the most effective among all institutes of the RSFSR State Construction Commission in this area. The chief of the Scientific Research Institute for Planning of Construction of the State Construction Commission must take steps to accelerate the introduction of this automated planning system. The bottleneck in implementation of the program of social-economic transformation of rural areas is the question of effective utilization of the production base of line construction organizations, particularly in the area of industrial housing construction. In 1981-1983 the territorial organizations of the Ministry achieved their assignments for completion of housing area to only 73 percent. Even union construction ministries underfulfilled the plan; the construction ministry by 21 percent, the industrial construction ministry by 18 percent, the heavy construction ministry by 13 percent. The capacity of Roskolkhozstroyob'yedineniya for wooden housing construction is being utilized only to 40 percent, resulting in high costs of housing. Nonuniform completion of housing also takes a toll; organizations of the Ministry of Agricultural Construction of the RSFSR have completed almost half of the housing completed in the entire year during the fourth quarter. Work on strengthening state architectural-construction monitoring, particularly at the rayon level, must be continued and extended.

[120-6508]

CONSTRUCTION MACHINERY AND EQUIPMENT

BROADER USE OF MODULAR BUILDING CONSTRUCTION URGED

Description of Method, Applications

Moscow NA STROYKAKH ROSSII in Russian No 6, Jun 85 p 2

[Article: "Intensify the Introduction of Modular House-Building by the On-Site Prefabrication Method"]

[Text] The immense tasks facing capital construction call unremittingly for the construction industry to implement a radical upswing in its level of industrialization. This problem can be solved by enlarging the proportions of such areas as plant readiness and prefabricated elements, and the best method of all to meet these requirements is through modular house building, as it is the most promising with regard to its capacity for being industrialized. This method has already been instrumental in the construction of over 8 million m² (total area) of housing and public buildings, and a number of OBD [modular house-building] enterprises have achieved satisfactory production results. However, continued dissemination of this progressive method has been hindered by the fact that the median indicators in this type of construction are still lower than for large-panel house building, this being explained mainly by flaws in plant production methods and in the way construction is organized, as well as by the low level of attention paid by the ministries, departments and scientific research and planning organizations to the modular house-building and by inadequate coordination of the operations. In conditions such as these, the practical experience derived from increasing the efficiency of constructing buildings of modular elements is extremely interesting.

In 1974, within the construction subdivisions of the GSSR Ministry of Health, what was essentially a new direction in modular house building was originated and then developed by construction department organizations, to wit, the on-site fabricating method of modular house building, the outstanding features of which, in comparison to existing methods are the production of modules and final fabrication elements on mobile fabrication works, thus reducing the proportionate capital outlays used to develop the production facility; the use of a fairly simple concrete form-casting machine equipped with a collapsible core for fabricating the modules, thus making it possible to eliminate production deviations while providing the modules with improved resistance to cracking as they are removed from the forms; an open, with no floor slab, design for "cap"-type modules and a module-cum-panel structural design for buildings which does away with double ceiling-floor slabs and interior walls.

Under the leadership of candidate of technical sciences Sh. Lomidze, V. Dzhana-shvili, T. Tkhilava, Z. Gonadze and others, a forming machine (inventor's certificate No 172859) was designed and manufactured, plans were drawn up and buildings for a public health and epidemiological center in Mtskheta, a 75-bed district hospital in Pasanauri, a holiday hotel in Tskhneti, a 332-bed regional hospital with a polyclinic capable of treating 600 visitors per day in Gurdzhaani were all built according to the above-mentioned plans in very short periods of time. At the present time, an inter-regional 543-bed hospital with a 600-visitor-per-day capacity polyclinic is being built of modules in Marneuli. There are designs, now at the development and approval stage, for one- and two-story apartment houses, a 140-place kindergarten-children's nursery, a 192-student school, a cultural center and an agricultural trade center, a 200-head cow barn, a 4,000-t capacity potato storage facility, 200-, 600- and 1,000-m³-capacity sewage purification facilities, 250- and 600-visitor capacity rural and municipal polyclinics, a medical center, homestead-type and resort-type houses, and finally, a 9-story apartment house.

Among the merits of the on-site method of modular house building in comparison with other types of fully-prefabricated construction methods, the following should be counted: the reduced labor outlays per m² of total area for each building, reduced construction time, reduced transport outlays, and the opportunity for organizing construction in undeveloped territories where there are no construction industry centers, this thanks to the enterprise's mobility.

The widespread introduction of the on-site method of manufacturing ferroconcrete building products in the southern regions of the Russian Federation, the Ukraine and Moldavia, as well as in Turkmenistan, Uzbekistan, Tadzhikistan and the Transcaucasian republics will make possible a significant increase in the level of industrialization in the construction of residential, public, domestic administration, agricultural and other buildings, and will aid in executing the tasks set by the CPSU Central Committee and the USSR Council of Ministers, which tasks relate to improving the effectiveness of capital investments and increasing labor productivity in the construction industry.

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Cost-Benefit Analysis

Moscow NA STROYKAKH ROSSII in Russian No 6, Jun 85 pp 22-25

[Article by A. Budilovich, leader of the TsNIIIEP Zhilishcha (Central Scientific Research Institute for Experimental Residential Planning) Economics Sector for New Types of Housebuilding, and candidate of economic sciences: "Technical and Economic Bases for the On-Site Method of OBD (Modular House-Building)"]

[Text] A technico-economic analysis of the method for building construction which uses on-site fabrication of the structural modules includes an evaluation of its basic features, using health facilities which have already been built, as well as those now under construction as examples. Such an analysis also takes in the materials planned for use in other types of buildings. This method underwent its greatest growth during 1980-1983, during the construction of a district hospital in Gurdzhaani, as well as during the presently-ongoing construction of the interregional hospital in Marneuli.

Questions of the economics of the on-site fabrication method of OBD [modular house-building] have been examined by the TsNIEP Zhilishcha conjointly with the TbilZNIIEP [Tbilisi Regional Scientific Research and Planning Institute of Type Design and Experimental Planning] and have found further reflection in a number of documents, specifically in the scientific and technical report entitled "Findings Regarding the Technical and Economic Advisability and Rational Fields of Application of Modular House-Building Using the On-Site Method of Fabricating Modules" which was submitted within Gosgrazhdanstroy [State Committee on Civil Construction and Architecture].

The standard which was accepted for use in the analysis of the technical and economic indicators for the hospital complex in Gurdzaani was embodied in the plan for a frame-and-panel built hospital (IIS-04 frame), which had the same capacity and layout of the hospital built in Chkhorotsku, since the construction industry had no plans for district hospital buildings designed for seismic conditions, such as were available for other industrial systems: neither panelled, cast-in-situ or modular.

The research showed that compared to a frame-and-panel-built building, an effect has been derived in practically all basic indicators. Thus, in the tabulation per the basic unit of measurement (1 bed) building labor outlays are reduced by 15 percent, with total labor outlays reduced by more than 20 percent, steel consumption was reduced by almost half, the estimated cost of construction (taking into account the possible reduction in the construction time as well as the corresponding overhead expenses)--by 3.4 percent, and specific capital outlays by almost one third.

The plan for the larger hospital in Marneuli has relatively better indicators compared to the Gurdzaani hospital: the volume of all the buildings, calculated on the one-bed unit of measure, was reduced by 25 percent, the overall area of the main building by 20 percent per single bed and the estimated cost for the complex as a whole--by 4.5 percent per single bed.

At the same time, it should be mentioned that the real indicators for the construction of the Gurdzaani hospital deviate from the planned indicators according to a number of positions: plant labor-intensiveness came to 5.4 man-hours/m² of total area instead of the planned 2.8 man-hours/m² called for by the plan, cement consumption was upped an average of 35 percent, the planned length of the construction period for the facility was not held to, which caused actual capital outlays to increase. It should be acknowledged that the principle reasons for this are the tremendously inadequate financing for the construction project and the organizational confusion associated with the change in the general contractor (GSSR Minselstroy [Ministry of Rural Construction] instead of GSSR Minzdrav). Trouble-free financing is extremely important to the process of on-site module fabrication, and especially to the setting up of the facilities for on-site fabrication works near the construction project. The result of allocating funds in smaller amounts than can be used, the equipment in the on-site fabrication works stands idle and this lowers the actual technical and economic indicators. This phenomenon has been observed in Gurdzaani and has occurred in Marneuli as well.

A characteristic feature of the method we are considering here is its universality. The use of on-site fabricated modules makes it possible to plan and build a variety of types of buildings. A considerable number of such projects have already been constructed at the present time, in particular homestead-type rural housing (by Gruzgiproselstroy [Georgian State Planning Institute for Rural Residential Housing Construction] and Gruzmezhkolkhozproyekt [Georgian Inter-Kolkhoz Planning Organization]), hospitals, summer gardening cottages, sewage purification plants and nine-story apartment buildings (by Gruzmedremproyekt) [not further expanded], rural schools and kindergarten-creches and cow barns (by Gruzmezhkolkhozproyekt). An analysis of these projects attests to the fact that there are still unused resources in the plans.

Gruzmezhkolkhozproyekt's design for a 192-desk rural secondary school provides for the erection of a modular educational wing based on a strictly modular design. Cement outlays will come to $0.28 \text{ m}^3/\text{m}^2$ of area, with steel unit outlays at 18.5 kg/m^2 , and labor outlays for manufacturing the modules are set at $3.98 \text{ man-hours/m}^2$, with $0.31 \text{ man-hours/m}^2$ for their installation. For purposes of comparison, it might be well to point out that when using a module-cum-panel design (such as for the hospital in Marneuli), concrete consumption came to $0.27 \text{ m}^3/\text{m}^2$, steel used came to 10 kg/m^2 , labor intensiveness for fabricating the modules came to $2.38 \text{ man-hours/m}^2$, with $0.28 \text{ man-hours/m}^2$ for their installation. Thus, the module-cum-panel version, with the modules arranged in a checkerboard pattern is more economical and it is a good idea to think of it as a basic solution, not only for hospitals, but for other public buildings as well.

Gruzmedremproyekt [possibly Georgian Medical Facility Repair and Construction Organization] found a relatively economical solution for a summer gardening cottage design. In it, the steel outlays for the modules come on the average to 10.5 kg/m^2 of area. The absence of exterior walls greatly reduces outlays of resources and labor, and reduces construction costs as well. The total cost for one of these cottages comes to $R86/\text{m}^2$ of area, with total labor outlays of $16.5 \text{ man-hours/m}^2$.

Some designs for rural apartment buildings which use on-site fabricated modules are still not economic enough. An increase in the area of their exterior enclosing structures is characteristic for them, and this consequently sharply increases the number of wall elements. Thus, in the design for a two-story, four-room, single-unit apartment house Gruzgiproselstroy provided 8 modules and 30 exterior wall elements. The mass of the module elements here comes to about 10 t, and 2.5 t for the exterior wall elements. This entails greatly increased outlays for the fabrication and installation of the elements, and increases material outlays. It is evident that it is more rational when building low apartment buildings to make the enclosing structures part of the modules. It would also be a good idea to raise the degree of plant readiness of the modules, considering the duplication of elements inherent in mass construction.

A remarkable economic effect was achieved while developing plans for agricultural buildings. For example, in Gruzmezhkolkhozproyekt's design for a 200-head cow barn, they succeeded in reducing the building's construction volume by 40 percent by using modules, this being in comparison to a similar large-panel type design, with steel outlays reduced by 14 percent and cement outlays reduced by one-half. The considerable saving in metal (14.3 t) which Gruzmedremproyekt also incorporated into their design for sewage purification buildings with a productive capacity of 100 m³/day used the very same modules as the hospital in Gurdzaani.

The complexity of an objective and thoroughgoing evaluation of plans for buildings designed to be built from modules fabricated at the construction site consists in the fact that there are no similar type plans which have been worked out using other industrial methods, i.e., panels, in-situ casting, or modules, which would be developed for the specific construction conditions found in the GSSR. That is why a comparative evaluation of the different building systems has been made using calculative data, and similar to a double-module cell with dimensions of 3.6 X 2 X (6.0 + 3.0 + 6.0) m, which is typical of the design for the Marneuli hospital. Calculated prime cost, the plant, building and total labor intensiveness, outlays of basic materials and power resources, proportionate capital outlays, outlays on current inputs plus interest and estimated construction costs were used as basic indicators.

The calculation used the norms presented in the "Recommendations for a Comparative Evaluation of Designs for Cast-In-Situ, Prefabricated and Masonry Buildings of Varying Numbers of Stories" (TsNIIEP Zhilishcha, 1983) and "Recommendations for Determining Technical and Economic Indicators and a Comparative Evaluation of Modular House Building to Other House-Building Systems" (TsNIIEP Zhilishcha, 1983). The evaluation was made in compliance with the statutes found in regulation SN-545-82: "Guidelines for the Selection of Rational Systems for Constructing Apartment Buildings for Mass Construction in Varying Conditions" (Stroyizdat, 1978) and "Guidelines for Selecting Design Resolutions in the Construction Industry" (Stroyizdat, 1982).

An analysis of the different building systems in comparable conditions indicates that the primary advantage of buildings constructed of modules lies in the reduced labor outlays needed to build them. Compared to panel construction, it requires 0.2 man-hours/m² of area, 0.6 man-hours/m² compared to frame-and-panel and 1.6 man-hours/m² compared to the cast in situ method. Total labor outlays for buildings using modules fabricated on the site have been reduced by 0.5 man-hours/m² compared to panel-built buildings, by 1.6 man-hours/m² compared to frame-and-panel structures and occupy the same level as cast-in-situ buildings erected using the large-panel form. Where an on-site module-fabricating facility is available, the effectiveness of these modules is improved.

Steel outlays for modular apartment houses is equal to that for panel-built buildings, and 6 kg/m² less than for those built by the frame-and-panel method, although they are 1.9 kg/m² greater than for cast-in-situ built structures. The labor intensiveness of modular production is somewhat greater than for the cast-in-situ method. The same situation holds true with regard to cost indicators.

It is evident from the above data that the on-site module fabrication method of erecting apartment buildings is the most competitive, and consequently it uses relatively less steel and other resources. Cranes of lesser lifting capacity are usually used with this building method, and this in turn results in reduced machine replacement. On the other hand, when using the poured-in-place method of fabricating house-building elements the forms have to be repeatedly assembled and dismantled, which in turn requires a more highly-skilled work force.

It might be well to mention that the results which have been obtained reflect only the regularities in the relations between varying building systems. They can be more precisely defined in specific conditions, and that is why each case needs to have corresponding technical and economic justifications made, including comparative evaluations of buildings constructed of on-site fabricated modules compared to buildings constructed of poured-in-situ ferro-concrete.

Total labor outlays and cost depend in great measure on the type of on-site fabrication works, its capacity and the transport routes used to deliver the products. This type of production method can be handled through the use of two solutions: an on-site fabrication works, situated immediately adjacent to the facility being erected, or a centralized fabrication yard, which provides products to the construction project from within a definite radius.

Having the fabrication yard right at the construction project makes it possible to turn the module-fabrication and installation operations into a single production process, ruling out the need to haul the products. At the same time, the advisability of setting up a fabrication yard depends on the volume of work to be done at a single construction project, since the cost of relocating equipment increases sharply for smaller building projects. One important condition for the setting up of an on-site fabrication plant is the availability of space for it. The makeup of one of these fabrication plants depends on specific conditions, the most important of these being the opportunity to use the structures and service lines set up for the primary construction facility and the existing production base.

When the fabrication works were being set up in Gurdzhaani, for example, they made use of the hospital's boiler house, and since there were no ZhBI [ferro-concrete products] enterprises nearby, they also made forms for fabricating exterior wall panels and pre-assembly elements part of their equipment. While organizing the fabrication works in Marneuli, provision was made for cooperation with the local SSK [rural construction combine] to help with fabricating steel reinforcing products and pre-assembly [dobor] elements, and they began to obtain steam from the adjacently situated canning industry enterprise.

Centrally-located fabrication works can be mobile or stationary. A special feature of the centralized fabrication works compared to on-site facilities is the prolonged time they can operate from a single location, naturally reducing or totally eliminating outlays for relocating them. At the same time, there do arise additional outlays for transporting their products from the fabrication works to the construction site. The makeup of these fabrication

plants depends to a lesser degree on the specific conditions of the locale. Thus, the fabrication works at Samto-Tskara has a full complement of both basic equipment and auxiliary structures, this being connected to the absence of any nearby enterprises, and the impossibility of using the project under construction--farmstead-type residences--in their operations.

The projected annual output of yards which have already been set up to fabricate building modules comes to: Gurdzhaani--30,100 m³, including 19,700 m³ and 10,400 m³ of ready-mixed concrete; Marneuli--22,600 m³, including 18,000 m³ in modules, 4,400 m³ in wall panels and 200 m³ in staircase modules; Samto-Tskara--20,500 m³, which includes 15,000 m³ in prefabricated ferroconcrete products and 5,500 m³ of ready-mixed concrete.

The proportionate capital outlays used to set up the fabrication yards depend on the makeup of the latter, but are in all cases considerably lower than the capital outlays needed to build plants. For the on-site fabrication works which have reduced complements of equipment, the proportionate capital outlays, based on a single m³ of precast products come to 24.4 rubles·year for Gurdzhaani and 23.4 rubles·year for Marneuli. A special feature of these works is that expensive crane equipment is used simultaneously at the on-site yard and in the building assembly operation. The proportionate capital outlays put into setting up centrally-located fabrication yards are greater and, for example, come, in Samto-Tskara, to 51.1 rubles·year/m³ in precast products, including 20 rubles·year/m³--the costs for developing the territory. At the time the ZZhBI [ferroconcrete and concrete products works] for rural construction use was built, with its annual capacity of 50,000 m³ of products, these outlays amounted to 88 rubles·year/m³, and the rural construction combine, with its capacity of 30,000 m² of overall area had outlays of 103.6 rubles·year/m². Out of the overall total of capital outlays, 45-47 percent goes into plant-type production for construction and installation work, and this equals 40-50 rubles·year/m³ of precast ferroconcrete, and using on-site fabrication yards--8-10 rubles·years/m³, i.e. these outlays are reduced 5-fold thanks to the equipment being located out-of-doors.

In any evaluation of the on-site module fabrication method additional outlays having to do with the relocation of equipment from one site to another must be taken into consideration. For the on-site fabrication yards this evaluation is carried out in the course of the transfer to each new project, and for centrally-located mobile fabrication plants, it is done following the completion of the construction of all construction projects within a specific service radius. The additional outlays for the relocation, including equipment disassembly, its transport and reassembly at the new site, as well as the work associated with setting up the fabrication equipment at the new site (installing foundations beneath the equipment, laying out the utility line network etc.), come to about 30 percent of the initial outlays.

Their specific values per unit of output depend on how long the fabrication plant operates in any single place, i.e., the longer it operates, the less the proportionate outlays. Thus, if the equipment is operated in one place for six months the additional outlays amount to from 11 rubles (where the fabrication equipment has been reduced) to 24 rubles (with a full complement of equipment has been used) when calculating on the basis of one m² of total area for the buildings under construction, and for a period of two years, it comes to three and six rubles respectively.

When the length of time that the fabrication equipment is operated at a single site is changed, the other basic indicators change as well. This stems from the fact that relocation takes an average of 1.5 months, which are taken from the work time of the operational equipment in the course of the year, and this correspondingly impairs the other indicators. Labor outlays also depend on the length of time the fabrication equipment works in one place and on how long it takes to move it. These additional outlays, calculated per 1 m² of total area are from 2.6-4 man-hours where the equipment works at one place for six months, to 0.6-0.9 man-hours where the equipment is in operation for a two-year period.

In order to determine the advisability of choosing this or that type of fabrication equipment, the regularities which have been discerned regarding changes which depend on the makeup of the fabrication equipment and on the lengths of time they operate in one place have to be compared with the indicators of outlays for transporting the precast ferroconcrete products, which indicators depend on distance and shipping conditions. For ordinary conditions transportation expenditures, calculated per single m² of area, come to 2.8 rubles at a distance of [redacted] and for mountainous regions, at elevations higher than 1,300 m above sea level, respective expenditures come to 3.4 rubles and 11.5 rubles. Labor outlays in normal conditions come to 2.8 rubles at a distance of 30 km and up to 9 rubles at a distance of 100 km; and for mountainous 1.8 man-hours and 17.5 man-hours respectively.

The choice of a type of fabrication equipment, its capacity and the time it is to operate in one place depend on the total and yearly volumes of construction, its concentration and the types of buildings being erected.

For the construction of major projects, the most preferable type of fabrication equipment is the on-site variety with a capacity of 16,000-20,000 m² of precast products per year, which operates in one place for no less than 1.5 years. In a case such as this, the area of the complex under construction must be 30,000-35,000 m² (140,000-150,000 m³ of structures) at an average ferroconcrete expenditure of 0.8 m³ per single m² of total area. Auxiliary buildings, utility service and supply lines belonging to the primary construction project can be partially used by the fabrication equipment, and this will reduce initial outlays by no less than 20-25 percent.

It is advisable to set up centrally-located fabrication equipment during the comprehensive building up of rural population centers and urban residential rayons. One condition which is necessary to make this profitable is to concentrate construction projects to within a radius of 10-15 km, which will insure that the equipment is used to the full limit of its yearly capacity (15,000-20,000 m³ of ferroconcrete products) while operating in one place from 1.5 to three years. During this time, the combined build-up of several settlements can be carried out where the total population is 1,500-2,000 people.

The technical and economic indicators depend as well on the operating schedule of the fabrication equipment throughout the year, which is, in turn determined by the climatic conditions. In locales where the weather is warm it can operate uninterruptedly throughout the entire calendar year--260 days, based

on a five-day work week. The number of operating days is reduced in less favorable climates. Should the number of days with below-zero temperatures exceed 20-25 percent of the total number of work days, the indicators for the on-site module fabrication method will be lowered to a degree considered rational for such climatic conditions.

At the present time the on-site module fabrication method is in use in the GSSR, where there are regions for which the average daily ambient air temperature throughout the year is above 0° C, and there are also regions wherein the period of time in which the temperatures are below zero lasts only 10-20 percent of total number of days of the year. There are regions like this in the AzSSR, the ArSSR, the UzSSR, the TuSSR and the TaSSR, as well as in the southern oblasts of the UkSSR and the RSFSR.

In summary, the following conclusions can be drawn:

the experience which has been gained in the process of designing and erecting buildings using the on-site module fabrication method attests to the fact that this method is one of the industrial types of house-building and makes it possible, thanks to the consolidation of the installation elements, to reduce labor outlays expended in the erection of buildings in comparison with frame-and-panel and panelled structures, and to drastically reduce capital investments which would be used in setting up a production base.

the technical and economic grounds used to select the type of fabrication equipment and rational design resolutions when using the on-site module fabrication method of house-building must in all instances be justified with due consideration for such basic factors as the forms and types of buildings under construction, the concentration of volumes of construction work, the availability and prospects for development of a production base and climatic conditions;

one important condition for the effective operation of on-site fabrication works is that the equipment which has been set up be given a full work-load (the ratio of module type sizes slated for the project is not always strictly coordinated with the number of forms which have been prepared), and it is therefore advisable to provide for the contingency of using the equipment to produce ready-mixed concrete "on the side";

for the continued dissemination of the on-site fabrication method, we need to improve both the module designs, and the buildings' design resolutions by developing new type sizes for economical module elements while at the same time observing the principle of interspecific standardization of the buildings, and by increasing the degree of plant readiness of the modules and buildings overall by handling the labor-intensive wiring and sanitary engineering work in the plant, and by more widespread use of the module-cum-panel system of building designing.

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CONSTRUCTION MACHINERY AND EQUIPMENT

TURNKEY CONCEPT NO SOLUTION TO SOME OLD PROBLEMS

Moscow EKONOMICHESKAYA GAZETA in Russian No 30, Jul 85 p 10

[Article by V. Sabanov, director of Glavsreduralstroy: "The Turnkey Experiment: The First Steps Could Have Been More Certain"]

[Text] In light of recent party decisions, it is sharply felt how important it has become to continue increasing the quality and pace of work at construction sites. The workers of Glavsreduralstroy [Chief Office of Central Urals Construction] have done much during the current five-year period and will continue their work through the end of the year. Unfortunately, there have been some omissions but they are small.

We hope to achieve a fundamental change for the better with the help of an economic experiment that has been conducted in many of the USSR's construction organizations. Since the beginning of the year, this same experiment has now been conducted by our directorate.

EKONOMICHESKAYA GAZETA has already published articles on the experience gained so far in the "turnkey" method of building and handing over various objects. Most of them were in keeping with our expectations. Without being repetitious, I would like to touch upon some of the problems considered most important today by the Ural builders.

The Efficiency of Incentives

The size of this directorate can be imagined from the fact that since the start of the five-year period it has completed construction of 15 large industrial objects and facilities, four of which contained more than a million square meters of housing. The industry's socialist obligations require that another 350,000 square meters over and beyond the plan be turned over by 5 November.

Experience in "turnkey" construction has been gained more than anywhere else at the Ivdel compressor station of the Urengoy-Center-2 pipeline. the Mikhailovsk Light Metals Machining Plant, the Sinarsky Pipe Plant, a dairy in the town of Polevskoy and in housing and many schools. The volume of contract construction and assembly work in these jobs came close to 100 million rubles.

The role of material incentives has grown considerably. Advances and bonuses based on the results of economic activity and divided by various indexes have been very effective.

There has been much improvement in preparatory engineering on the designs of construction organizations and in the organization of building work. There has been a sharp rise of more than 150 percent in the amount of reconstruction and technical re-equipment done in existing plants.

However, it there has been some difficulty in converting plans into actual calculations of the working abilities of the various construction organizations. Nevertheless, the directorate's plan for the coming year has been for the first time very closely substantiated.

Continuous two-year plans for the activation of large-scale productive capacities have justified themselves. We have introduced them at housing construction sites. At the same time, the number of construction projects started has decreased a great deal, by more than half.

We are working constantly to increase brigade contracts until three-quarters of our work will be done in this manner. These brigades are for the most part reinforced brigades made up of many different crews. Each brigade performs its work for from 300,000 to 400,000 to one million rubles. By the end of the year, there will be twice as many of these reinforced brigades.

What have been the first results of this experiment? There has been an increase over the same period last year in the amount of work done by internal forces. A growth in construction done by internal forces had been achieved in the same period of last year. Out of 19 general contractor trusts, 15 have increased the volume of their work this year while all of them last year just marked time.

What Hinders Important Experience

Nonetheless, we still have a long way to go before we see any substantial improvement. The plan for contract construction and assembly work has not been fulfilled. Subcontractors of the Ministry of Specialized Construction and Assembly Work have not fulfilled their tasks. Construction output is below plan and nonproduction costs and losses from contractor activities are increasing.

The shared responsibility of participants to construction to fulfill their planned assignments and contract obligations have in essence changed very little. Here is one painful example.

In many building and construction sites, including the construction of local councils, work is held up by a lack of equipment, material, construction ground and design and budget documentation. It was for these very reasons that 15 million rubles worth of contract work was lost.

The completion of construction of industrial facilities and the turning over of commercial construction has been planned in an extremely irregular manner

this year. Out of 50 of the more important starting projects this year, not a single one was planned in the first quarter, five were planned in the second quarter, 8 in the third and in the fourth and last quarter, 37 were planned!

For trusts, planned work could be balanced with its capabilities over the first 6 months of the year. Other than that, the industry is not in a position to make any more profound changes. This year, considering the task of increasing labor productivity and the expected number of workers, the calculated average annual capacity of the directorate itself has been estimated at 626 million rubles. By increasing the use of the industry's capabilities through lowering work time losses, we can increase the volume of contracted construction and assembly work by almost 11 percent to 684 million rubles.

With the planned 4.5-percent growth in labor productivity, the amount of work called for can only be performed with a sharp increase in the number of workers and the labor resources necessary for this are lacking. We will not be able to liquidate such large "scissors" only by finding internal reserves but, as we know, the Sverdlovsk workers have initiated a movement to fulfill the planned work with less forces.

One of the weakest links is the supply of material and technical resources. This weak link has, unfortunately, interfered with million rubles worth of construction and assembly work. In comparison with designs and estimates, This year, our supplies ran short by 20,000 tons of cement, 30,000 cubic meters of timber and many other materials.

The system and order of realization of funds earmarked by territorial organs of the USSR State Committee on Material and Technical Supply have also not changed. This is the situation today. The Ural directorate's work program has been increased by 11 percent but it has received fewer material resources than last year. Therefore, in the second half of the year when the volume of work grows sharply, the material supply becomes proportionally worse. The severity of this problem is only slightly alleviated by strong measures to save material at construction sites.

We have grown tired of waiting for the USSR State Planning Committee [Gosplan] and the USSR State Committee on Construction to confirm the procedure used by clients to hand over the design work for the construction of industrial facilities.

The procedure for setting agreed prices for construction work and whether contractors are to spend their own capital to cover shortcomings both remain open questions. The USSR Construction Bank still does not provide continuous construction financing and the responsibility of the organizations ordering the construction has not been increased.

Our Suggestions

Finally, we feel that it is necessary to limit the number of Glavsruduralstroy's approved indicators and standards remaining in the five-year plans:

- activation of production capacities and construction sites;
- limits on capital state investments and construction work, activation of basic funds, production capacities and construction (for internal construction);

- the pace of growth in labor productivity;

In yearly plans, the basic indicators should be:

- openings of industrial facilities and buildings;

- profit from all types of activity;

- norms for deduction of all types of profit remaining at the disposal of the directorate;

- norms for deductions to the economic incentives fund;

- Norms for the formation of a single fund for scientific and technical development;

- the supply of materials, machinery and other material and technical resources necessary to fulfill the plan.

The remainder should be worked out by the central directorate itself.

There is still one more painful problem. As we know, ministry contractors have been allowed to create within main territorial construction bureaus subdivisions to review design and budget documentation before it is finished. The USSR State Construction Committee has been ordered to work out and confirm a policy on this problem. However, this policy has still not been confirmed and therefore the USSR Ministry of Heavy Construction is unable to create such subdivisions. This has also hindered us from permanently establishing the specialized bureau for reviewing and improving designs that is already operating on an experimental basis within our directorate.

We feel that the State Construction Committee should more quickly confirm its position on such subdivisions and consider the valuable experience gained by Glavsreduralstroy and other directorates that have experimented with the perfection of their designs.

It would be desirable for Gosplan's Interinstitutional Commission on Experimental Construction to consider these proposals and more quickly approve methodological directives. Glavsreduralstroy has already been operating under the new situation for 6 months.

Increasing the responsibility of all participants in the construction process will encourage its intensification and efficiency.

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CONSTRUCTION MACHINERY AND EQUIPMENT

SUCCESSFUL COMPLETION OF FIVE-YEAR PLAN

Moscow STROITEL'NYYE I DOROZHNYYE MASHINY in Russian No 1, Jan 85 pp 2-3

SPIRIDONOV, Ye.V., First Deputy Minister of Construction, Road and Communal Machine Building

[Abstract] The supreme soviet of the USSR has confirmed the state plan for economic and social development of the USSR for 1985, the final year of the eleventh five-year plan. The plan calls for accelerated production of modern machines and equipment, improvements in the reliability of equipment, improvement of the quality of products, broad utilization of the advances of science and technology in production, further economies and effective utilization of labor and material resources. The total output of products in 1985 is to increase by 3.3 percent, the productivity of labor by 4.1 percent. The fraction of products of highest quality category is to reach 38 percent. The plan calls for an increase in the output of high capacity scrapers by reducing the production of low capacity scrapers. The production of woodworking equipment, including type LT-175 loader-transporters, is to increase by a factor of 7, of pruning equipment by 35.7 percent, of bundling equipment by 11.4 percent, of wood loading equipment - by 15.4 percent. The production of consumer goods is to increase by 14 percent in 1985, with a simultaneous increase in quality and assortment. The major directions of work of the branch of industry during the 12th five-year plan are set forth in branch goal programs for the technical level, technical rearment, the economy and specialization and improvement of production. The new technical level program calls for orientation towards the creation of systems of machines to include basically novel design decisions by the utilization of inventions and the results of scientific research, allowing a significant improvement in the technical characteristics of machines.

[098-6508]

CONSTRUCTION MACHINERY AND EQUIPMENT

INTRODUCTION OF POLYMER ADDITIVES TO PRECAST REINFORCED CONCRETE PRODUCTION

Mukimi ARKHITEKTURA I STROITEL'STVO UZBEKISTANA in Russian No 12, Dec 84,
pp 4-6

AMINOV, E.Kh., Candidate of Technical Sciences, SHCHUCHKIN, M.N. and PAK,
Yu.G., Engineers, Uzgiprovodkhoz.

[Abstract] Synthetic multipurpose polymers are used as additives to concrete. Uzgiprovodkhoz Institute has developed a new concrete mixture plasticizer based on phenol. This article discusses the properties of concrete containing polymerphenol (PF_p), the ways in which these properties change with time and attempts to establish the possibility of directed improvement of properties to allow broader utilization of the additive in the production pf precast reinforced concrete. The use of polymerphenol or an aqueous alkaline polymerphenol solution allows a decrease in water consumption of the concrete mixture and acceleration of the curing rate of the concrete while significantly increasing strength at maturity. Polymerphenol is a brown or almost black powder containing four to twelve phenol links primarily connected by C-C bonds, is soluble in many polar solvents and preserves its properties on storage for over three years under the climatic conditions of Central Asia. A diagram is presented of the process of producing polymerphenol PF_p. The All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics has preliminarily concluded that concrete containing polymer phenol superplasticizer up to 0.2 percent of the weight of the cement is safe for use in water engineering and land reclamation construction. Further pilot-scale studies are suggested.

Figures 2, references 4 Russian.

[086-6508]

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CONSTRUCTION MACHINERY AND EQUIPMENT

HYDRATION AND SOLIDIFICATION OF CEMENT WITH ELECTROLYTES AND SURFACTANTS

LENINGRAD TSEMENT in Russian No 12, Dec 84, pp 3-4

GORBUNOV, S.P., Engineer and TROFIMOV, B.Ya., Candidate of Technical Sciences, Chelyabinsk Polytechnical Institute

[Abstract] Adding electrolytes such as CaCl_2 , K_2CO_3 and NaNO_2 to cement paste changes the conditions of crystallization of the hydrate phases, increasing the degree of saturation of the liquid phase with respect to hydration products by increasing the ionic strength of the solution. SDB additive, consisting of alkali metal lignosulfonates, decreases surface tension of the solid-liquid boundary, increasing the stability of the finely dispersed structure of the cement paste, slowing hardening of the cement, decreasing the hydration of clinker minerals in the initial period. Results are presented for testing of the strength of cement paste based on sulfate-resistant type 400 Portland cement with antifreeze additives containing SDB. Compressive strength testing indicates that the addition of SDB with potash changes material structure formation conditions. SDB helps to reduce the size of hydrate phases, slightly slowing hydration initially but leading to the formation of a strong cement paste at below-freezing temperatures.

Figures 2, references 3 Russian.

[083-6508]

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29 October 1985

CONSTRUCTION MACHINERY AND EQUIPMENT

CAUSES FOR POOR PRODUCT DELIVERY BY CONSTRUCTION MINISTRY ENTERPRISES

Moscow MATERIEL'NO-TEKNICHESKOYE SNABZHENIYE in Russian No 1, Jan 85, pp 46-47

GUSHCHIN, N.

[Abstract] A report is presented on causes of production of poor quality products by enterprises under the USSR Construction Materials Ministry. The output of slate, ceramic tile, plumbing fixtures, resilient linoleum and other products is frequently of poor quality, functioning poorly, leaking, of poor appearance, color and finish and generally unsatisfactory for use in production projects. The author cannot agree with optimistic reports of the industry concerning improvement in the assortment and quality of products put on the open market for consumers. The output of products rated high in quality in the Ministry is only 21.3 percent of total production, slightly over half of the level achieved by other areas of the Soviet economy. The reason for production of poor quality products is the low level of technological discipline. The Ministry is not demanding in its relationship with enterprises which do not achieve good quality, so other enterprises are not stimulated to achieve good quality production either.

[081-6508]

CONSTRUCTION MACHINERY AND EQUIPMENT

DOMESTIC PRODUCTION OF COLD-RESISTANT EQUIPMENT URGED

Moscow IZVESTIYA in Russian 4 Jun 85, p 2

CHERSKIY, N., Chairman of Presidium, Yakutsk Branch, Siberian Department, USSR Academy of Sciences, Deputy to USSR Supreme Soviet, Hero of Socialist Labor, Academician, and URZHUMTSEV, Yu., Director, Institute of Physical and Technical Problems of the North, Yakutsk Branch, Siberian Department, USSR Academy of Sciences, Corresponding Member, USSR Academy of Sciences, Yakutsk.

[Abstract] Winter in the north tests equipment greatly. Bulldozers manufactured by Caterpillar in the USA experienced 50 to 60 percent total downtime. Unit-Rig dump trucks (Canada-USA) experiences 30-40 percent downtime in winter. There is presently only one enterprise in the USSR prpducing equipment designed for use in the north--the Krasnoyarsk Heavy Excavator Plant. Running gear parts and units exposed to the open air fail more frequently in the cold. Filled fluorine-based plastics have been considered as a solution to the problem of increased failures in cold weather. The authors call for production of cold-resistant equipment at home rather than the more fashionable path of purchasing such equipment abroad. The need for cold resistant equipment has been known for years. Why not produce it in the Soviet Union? Waste-free technology for the production of sealing units and friction units from polytetrafluroethylene has been developed by the author's institute, allowing such products to be produced in the Soviet Union rather than pruchased abroad.

[137-6508]

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METHODS TO IMPROVE POWER PLANT CONSTRUCTION DISCUSSED

Vilnius SOVETSKAYA LITVA in Russian 11 Jun 85 p 2

STROGANOV, Yu., Special Correspondent

[Abstract] Workers installing the second unit of the Ignalinskaya Nuclear Power Plant completed pouring of concrete in half the time required to pour the first unit. Four stages in improvement of construction technology allowing greatest increase in speed are discussed. The most important change was the use of a super plasticizer, a special chemical additive to the concrete which improves its grade and allows a savings of cement. The four stages in learning to deal with the new additive and the changes it produces in pouring of concrete structures are briefly described.

[140-6508]

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IGNALINSKAYA NUCLEAR POWER PLANT CEMENT POURING

Vilnius SOVETSKAYA LITVA in Russian 11 Jun 85 p. 2

STROGANOV, Yu., Special Correspondent

[Abstract] Workers installing the second unit of the Ignalinskaya Nuclear Power Plant completed pouring of concrete in half the time required to pour the first unit. Four stages occurred in the improvement of the technology allowing the great increase in speed. The most important change was the use of a super plasticizer, a special chemical additive to the concrete which improves its grade and allows a savings of cement. The four stages in learning to deal with the new additive and the changes it produces in pouring of concrete structures are briefly described.

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